

INTERNATIONAL
SUBCOMMISSION ON
JURASSIC

STRATIGRAPHY

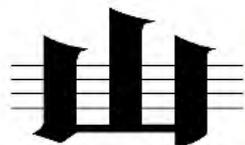
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Newsletter 36, October 2010

Edited by Stephen Hesselbo



Arroyo Lapa, Neuquén Basin, Argentina, a key section for Toarcian ammonite biostratigraphy and chemostratigraphy in the southern hemisphere (photo: S. P. Hesselbo)



ISJS

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CHAIR'S FOREWORD

József PÁLFY, Budapest

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After a longer-than-usual wait, I hope you will be pleased to read this latest issue of the Jurassic Newsletter.

Unquestionably, the highlight of this year for our Jurassic community was the 8th International Congress in Shehong of Suining, Sichuan, China. A report on this grand conference, contributed by former ISJS Chair Nicol Morton, will bring back fresh memories for those who attended, and will give a glimpse of this extraordinary experience for those less lucky.

The Congress provided an opportunity to review the status and stimulate progress in the process of selecting the GSSPs for five remaining stages. For this Newsletter issue, some of the stage Task Group and Working Group convenors have provided update reports. (Note that I intentionally make a distinction between Task Groups, which still have a task to define their stage GSSP, and Working Groups, whose job is to continue work on the stratigraphy of stages with an already defined GSSP, or on some other aspect of Jurassic studies.)

Included, you will also find the official letter on ratification of the base Hettangian GSSP. This formally completes the process of defining the base of Jurassic in the Kuhjoch section in Austria. With this newly minted golden spike, our upper limit, the Jurassic/Cretaceous boundary (fortunately the responsibility of the Cretaceous Subcommittee) remains the last of the Phanerozoic system boundaries still to be defined by a GSSP.

The GSSP concept was the main topic of a workshop in Prague, organized by our parent body, the International Commission on Stratigraphy. A conference report is devoted to this meeting, as well as to a

number of others on Jurassic topics from last year. Other items of interest include interesting book summaries and other correspondence. It is with deep sadness that we include an obituary for our recently departed colleague, the eminent Jurassic stratigrapher, John Callomon.

Issues of ISJS communication were discussed at some length in Sichuan. I'm pleased to announce that the Jurassic Subcommittee is forming a partnership with Volumina Jurassica, which will be regarded as an ISJS-sponsored forum for research publications on any Jurassic topic. We also are reconsidering the role of our Newsletter. One proposal currently on the table is to replace it with a two-tier solution: to channel research-related items to Jurassica, and use an electronic mailing list for prompt dissemination of news items of some immediacy and urgency, thus replacing the traditional newsletter. We are interested to hear your feedback on these plans.

I thank our Secretary, Steve Hesselbo for editing the Newsletter and all the contributors for sharing their thoughts and news with our Jurassic community.

Happy reading!

INDIA HOSTS THE JURASSIC CONGRESS IN 2014

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Where next after Erlangen, Lisbon, Poitiers, Mendoza, Vancouver, Palermo, Krakow and Shehong of Suining? – this was the question of the year for Jurassic conference goers.

At several previous occasions, the venue of the next congress was decided and announced before the current meeting was over. Prior to this year's congress in Sichuan, the ISJS executive was approached by two prospective host countries for the 9th International Congress on the Jurassic System: India and Mexico. As usual, the current meeting was used to win over colleagues for one or the other venue. The poster session featured an introduction from both prospective hosts, and Mexico distributed a CD and a professionally prepared brochure to present their plans. The open business meeting of ISJS provided an opportunity for both prospective hosts to make a presentation about what one could expect from a conference in one place or the other. Indeed, both Dharendra Pandey from India and Ana Bertha Villaseñor from Mexico came forward with informative and well-designed presentations. Delegates of this year's conference were shown what to expect from Jaipur or San Luis Potosí, for conference facilities, scientific focus of the meeting, field trip targets, and cultural as well as touristic attractions. The Mexican proposal was especially well-designed portraying San Luis Potosí and environs as a tourist magnet, whereas the University of Rajasthan in Jaipur and Jurassic sedimentary basins of Kachchh and Jaisalmer were featured as important centres of Jurassic research and focus of field studies.

The ISJS executive, sensing beforehand that it would be a difficult choice between two well-prepared candidates and two exciting venues, formulated a new protocol to make a selection. The ISJS announced in Sichuan that it was interested to hear the popular opinion about the candidates but wanted to put the responsibility of decision in the hands of the Subcommittee's voting members. Thus a straw poll was conducted after the presentations in the open business meeting. And what an amazing result we had from the poll! It was a near perfect tie, with 51 delegates for Mexico and 50 for India.

The result was duly submitted to the voting members, about half of them present in China, along with the electronic files of the Indian and Mexican proposals. The voting members carefully considered which of the two exciting proposals would translate into a better choice for our community for 2014. After all the 23 voting members cast their votes, India came out as a winner with 14 votes in favour, as opposed to 9 for Mexico.

Fully acknowledging their merits, I heartily thank both teams for their effort in producing proposals of such high quality. It is encouraging to see that our conference series is successful enough that there is now repeatedly real competition for hosting the next Jurassic meeting. I hope that Ana Bertha Villaseñor's team will take courage from the popularity of their proposal and submit it anew four years later. I congratulate Dharendra Pandey and his team for their winning bid. After two unsuccessful attempts, the dedication of our Indian colleagues bears fruit. I wish them best of luck for the preparation of a successful 9th International Congress on the Jurassic System in India. The ISJS will do everything it can to help stage another world-class conference.

See you all in Jaipur in 2014!

THE 9TH INTERNATIONAL CONGRESS ON THE JURASSIC SYSTEM IN JAIPUR (RAJASTHAN), INDIA

D. K. PANDEY, Jaipur
Franz T. FÜRSICH, Erlangen

Why in Jaipur

General/Cultural information

- India has a large cultural diversity and old traditions.
- Jaipur (Pink city) is a city of palaces and a heritage city of India. The observatory in Jaipur has recently been included in world heritage listing, not far (265 km) from the international Airport in New Delhi.
- Jaipur is one of the cities of the tourist's "Golden Triangle" of India (New Delhi – Jaipur – Agra).
- A one-day mid-conference visit to the touristic highlights of the city (Palace of the Wind, City Palace, Observatory, Amber Fort, Jaigarh Fort) will therefore be offered to the participants.
- The city has a large and very old University, University of Rajasthan, supported by the State Government of Rajasthan.

Logistics

- Jaipur is connected with New Delhi and Mumbai by all modes of conveyance. There are several flights per day from Indira Gandhi International Airport (Domestic Terminal) in Delhi and the International Airport in Mumbai (Bombay).
- Not very expensive.
- Good logistic and hospitality; there are wide range of hotels, five star hotel to simple but clean guesthouses.

- Excellent weather condition from November to February (average day time temperature 25-30° C).
- Temperature-wise, the best time for the congress would be early January so that the pre-congress field trip could take place immediately after Christmas.

Why in India

- It has not been held in India, in spite of the fact that a large number of geo-scientists have been working on Jurassic sediments since mid nineteenth century.
- Much progress on the sedimentology, stratigraphy and palaeontology of the Jurassic basins has been achieved during the last two decades by several research groups.
- There are many Indian Geologists who work on marine and non-marine Jurassic strata, who are not able to attend an international congress outside India due to financial or other reasons. They would benefit if the congress were held in India.

Geological information

- Offers an opportunity for the participants to visit marine and non-marine Jurassic outcrops in India (particularly, the Kachchh, Jaisalmer and Gondwana sedimentary basins).
- Easy accessibility of the marine and non-marine Jurassic outcrops.
- Basins display very good exposures.
- All the sedimentary basins are very rich in fossils (invertebrates, vertebrates and plant fossils) well suited for palaeoenvironmental studies.
- Paleogeographically, the marine outcrops (Kachchh and Jaisalmer basins) on the western margins of

the Indian subcontinent) represent a part of the southern Tethys geological domain and a separate biogeographic province (Ethiopian Province).

Proposed pre- and post-congress field trips

Middle and upper Jurassic rocks of the Kachchh Basin (one week):

The Kachchh Basin is a small rift basin, situated on the western margin of the Indian craton. It is well known for its rich marine fauna of ammonites, bivalves, brachiopods, corals, sponges, echinoderms, microfossils, trace fossils, etc. Environments range from alluvial fans to rivers and carbonate and siliciclastic ramps. The strata show a distinct cyclicity influenced partly by regional tectonics, partly by relative sea-level and climatic changes. The trip will include a visit to the vast Recent salt flats of the Great Rann of Kachchh and to remains of the 3000 years old Indus Valley civilisation at Dholavira in Khadir "Island".

Middle and upper Jurassic rocks of the Jaisalmer Basin (one week):

The Jaisalmer Basin is a pericratonic shelf basin, situated also on the western margin of the Indian craton. Although the sequence is less complete than that of the Kachchh Basin it also has a high diversity of marine fauna. Environments range from continental to marginal marine to carbonate and siliciclastic ramps. The basal part of the succession is known the world over for very rich gymnosperm wood fossils. There are a few marine marker horizons in the younger part of the succession, which can be used for interbasinal correlation (Pandey et al. 2009). The field party will be based in Jaisalmer, one of the most beautiful medieval cities of India. Included

in the programme is a visit to the sand dunes of the Thar desert.

Non-marine Jurassic rocks of the Gondwana Basins in the central and eastern part of India (one week):

The Jurassic non-marine sediments of the Gondwana Supergroup contain type-sections of the Gondwana Supergroup. They are known for the good preservation of plant and vertebrate fossils. The succession will be very interesting for palaeobotanists, vertebrate palaeontologists and participants working on non-marine sediments. Included in the programme is a visit to either Lucknow with its typical Mogul architecture or to the holy city of Benares (Varanasi) along the Ganges River.

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Oxfordian condensed deposits with ferruginous ooids, Kachchh Basin, India

THE HETTANGIAN GSSP

Geoff WARRINGTON

Ratification of the base Hettangian GSSP was requested by the ICS on 10 February 2010, and approved by the IUGS Executive Committee on 16 April 2010. The proposal originated in the Triassic-Jurassic Boundary Working Group (TJBWG) of the ISJS and with that ratification, the function of the Group, and the offices of its Secretary, Gert Bloos, and Convener, myself, are formally ended.

Voting within the TJBWG began on 14 February 2008 and was completed on 7 April 2008. The ISJS voted on the outcome in June 2008 and forwarded the proposal to the ICS in mid-August, 2008. The stages in the voting, and the results in each, were reported in December 2008 in *ISJS Newsletter* **35/1**. The TJBWG Convener and Secretary established a geographically widespread voting membership with involvements in a wide range of aspects of Late Triassic to Early Jurassic studies. As the Convener was involved with one of the candidate GSSP proposals he distanced himself from the selection procedures, which were organised and conducted by the Secretary, in consultation with the then ISJS Chairman.

In a review of the Hettangian GSSP outcome in December 2008 (*ISJS Newsletter*, **35/2**) the ISJS Chairman, Nicol Morton, noted that a minority of ISJS members were unhappy with the final proposal for a GSSP in Austria and an ASSP in Nevada. The writer is amongst that minority and whereas previously, because of his involvements with a proposal and as Convener, it was inappropriate for him to make comments, he is now free to do so.

How four GSSP proposals (*ISJS Newsletter* **33**, July 2006) became six after the Jurassic Congress in Krakow (September, 2006) was explained by Nicol

Morton (*ISJS Newsletter* **34(1)**, July 2007). Five of the proposals appeared in that Newsletter; the Secretary reissued them, with modification, in December 2007, in preparation for voting. Each was accompanied by a completed questionnaire and a summary of discussion; the purpose of the questionnaire was to ensure that GSSP requirements were fulfilled and, by using a standard format, facilitate comparison between disparate presentations. A draft of the update of the last proposal was forwarded to the ISJS Chairman in August 2007 but was not included in the next newsletter (**34(2)**, December 2007). It was forwarded to the Secretary on 31 January 2008 for electronic distribution to TJBWG voting members, and submitted to the ISJS website on 1 February 2008. The first vote, to select a preferred boundary marker, opened on 14 February 2008, with a closing date of 29 February. Nearly 90% of the voting membership responded; five of the proposals had been available to them in some form for up to six months. Throughout my involvement with Hettangian GSSP I had endeavoured to maintain a level playing field to ensure that each proposal was fully documented and, because I was involved with one, that there should be no basis for accusations of preference; both intentions were in vain. The first did not survive the haste with which the voting on the fundamental issue of a primary boundary marker was initiated and carried out in order to meet an ICS deadline that was later removed.

The sixth and last proposal was eventually published in December 2008 (*ISJS Newsletter* **35(1)**), together with the results of all the votes within the TJBWG and the ISJS that led to a GSSP at Kuhjoch in Austria and an ASSP in Nevada being proposed to the ICS. At this stage, I was able to comment and offer reasons for being unable to support the Kuhjoch proposal. This brought a note of appreciation for my “shattering” comments from another ISJS member. My comments

were made objectively and in good faith on the basis of information available in the original text or apparent in the accompanying illustrations (*ISJS Newsletter* 34/1: 2-20). However, the authors of the proposal rejected most of them (unspecified) as matters of opinion, while admitting some had been addressed in a revision of the proposal (3 June 2008) submitted to ICS.

Nothing that has appeared since the ISJS vote on the matter in June 2008 has given me cause to change my views on the chosen GSSP. For example, the pollen *Cerebropollenites thiergartii* was proposed as a proxy for the primary boundary marker, *Psiloceras spelae*, with a first appearance at the same level in the GSSP section (von Hillebrandt *et al.*, *ISJS Newsletter* 34/1: 14). This pollen has now been recorded lower in that section (Bonis *et al.*, 2009, fig. 5), just above a tectonic break (thrust fault) around 3.7 m below the GSSP level. This break was not recognized in the original proposal; it represents the absence of a palynomorph zone (Bonis *et al.*, 2009, figs 8, 9) and coincides with marked changes in the palynofloras (*ibid.* figs 3, 5, 7). A geological requirement of a GSSP is that there should be no tectonic disturbance. It is now apparent that the section is more tectonically disturbed than simply comprising overturned beds, and that this has resulted in a gap in the succession near to the GSSP level that will affect the continuity of records through the succession.

Others voiced their thoughts freely during the voting in the TJBWG and subsequently; it has now been my turn. I shall be observing developments regarding the GSSP and its application with interest. The introduction of five of the candidate GSSPs in *ISJS Newsletter* 34(1) (July 2007) was accompanied by an exhortation from Nicol Morton that they should be studied very carefully and that objective professional judgement should be exercised in voting situations as “the result

will be with us for many years.” – and so it will.

I have been privileged to visit many interesting places in connection with the TJBWG, and to meet and receive cooperation and assistance from workers from many countries and disciplines – to such people I extend my appreciation.

APPENDIX:

The writer’s last report as Convener (*ISJS Newsletter* 32, August 2005) included a compilation of new literature relevant to the work of the TJBWG. Many publications covering aspects of Late Triassic to Early Jurassic successions have appeared since that time; those most relevant to the system boundary are listed below.

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HESELBO, S. P., MCROBERTS, C. A. & PÁLFY, J. (eds). 2007. Triassic-Jurassic boundary events: problems, progress, possibilities. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 244 (Special Issue): vi+423pp. [Introduction by the editors, plus 23 research papers]

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Natural History and Science, Bulletin
41: 415pp. [10 articles]

Palaeobotany and Palynology, **156**:
376-400

Volume 90 (part 2) of *Palaeodiversity and Palaeoenvironments* (in press) is a Special Issue on the topic of 'Triassic-Jurassic biodiversity, ecosystems, and climate in the Junggar Basin, Xinjiang, Northwest China'.

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KIMMERIDGIAN

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An ample report presenting the current progress in recognition of the Global Stratotype Section and Point (GSSP) for the base of the Kimmeridgian Stage has been presented in the last issue of ISJS Newsletter (Wierzbowski 2008). It should be remembered that the Flodigarry section at Staffin Bay in Skye, northern Scotland, has been accepted both by the Kimmeridgian Working Group, and the International Subcommittee on Jurassic Stratigraphy as the primary standard for the Kimmeridgian Stage with its base located at the base of the Subboreal Baylei ammonite Zone. The only problem (and the most complicated one) which is still unresolved is which of the two ammonite horizons based on successive members of the genus *Pictonia* marks the base of the Baylei Zone: the *flodigarriensis* horizon or, lying directly above, the *densicostata* horizon (see also Matyja *et al.* 2006; Wierzbowski *et al.* 2006 where the horizons and the section in question are described in detail).

New biostratigraphical data from other sections (cores from Barents Sea and Norwegian Sea, the Nordvik section of northern Siberia, the Unzha River section of the Kostroma District of Russian Platform) revealed a larger correlation potential for the base of the *flodigarriensis* horizon than the base of the *densicostata* horizon, and thus its larger significance in recognition of the base of the Kimmeridgian Stage in the Subboreal and Boreal areas of Arctic, as well as northern Europe and northern Asia (Wierzbowski & Smelror 1993; Wierzbowski *et al.* 2002; Rogov & Wierzbowski 2009; Glowniak *et al.* 2010, in press). This preference results from good correlation between the base of the *flodigarriensis* horizon treated as the base of the Subboreal Baylei Zone, and the

base of the Boreal Bauhini Zone - marked by appearance of ammonites of *Amoeboceras* (*Plasmatites*) group such as *A.(P.) praebauhini* (Salfeld) and *A. (P.) lineatum* (Quenstedt) (see Wierzbowski 2008) which show a wide palaeogeographical distribution and are very useful in stratigraphical correlations.

The recent study of the Subboreal aulacostephanids from southern England – *i.e.* their “home area” (Wright 2010) - evidences the incompleteness of the succession at the boundary of the Oxfordian and Kimmeridgian in these sections, but indicates the presence of the *flodigarriensis* horizon in some basal sections of the area, such as the Wessex Basin. Thus, the previously supposed local occurrence of an index ammonite - the *Pictonia flodigarriensis* of the *flodigarriensis* horizon in northern Scotland only - used as argument against wider recognition of the base of the *flodigarriensis* horizon as a uniform boundary of the Oxfordian/ Kimmeridgian boundary, is not substantiated.

The problem still not resolved is the correlation potential of the *flodigarriensis* horizon versus that of the *densicostata* horizon in recognition of the uniform Oxfordian/Kimmeridgian boundary in the Submediterranean/Mediterranean and other (*e.g.* Pacific) successions of the World. Nevertheless, general opinions related to wider recognition of the Oxfordian/Kimmeridgian boundary outside the Subboreal/Boreal successions can be given.

The results of studies of Subboreal and Boreal ammonites occurring in the Submediterranean succession in Europe (especially in Poland and southern Germany) suggest the following correlations of the potential Oxfordian/Kimmeridgian boundary between Subboreal/ Boreal and Submediterranean zonal schemes (Wierzbowski 2008; see also Schweigert & Callomon 1997; Matyja

& Wierzbowski 1997; Wierzbowski *et al.* 2010):

- if the base of the Baylei Zone is placed at the base of the *flodigarriensis* horizon, it will correspond to some lower part of the Bimammatum Subzone;

- if the base of the Baylei Zone is placed at the base of the *densicostata* horizon, it will correlate with some lower part of the Hauffianum Subzone, or upper part of the Bimammatum Subzone.

The problem can be solved in an unequivocal way only if one can prove which of the two Submediterranean levels has a wider correlation potential, and thus may be treated as a more convenient for the recognition of the Oxfordian/Kimmeridgian boundary: that close to the base of the Bimammatum Subzone, or that near the boundary of the Bimammatum and Hauffianum subzones. In my opinion the materials gathered so far are rather in favour of the former solution. Current results of palaeomagnetic studies seem to indicate that the base of the *flodigarriensis* horizon and lower to middle parts of the Bimammatum Subzone are to be correlated as placed close to the coeval magnetozone boundary (Przybylski *et al.* 2010; but note that some additional studies in the Flodigarry section should be undertaken to solve in detail the problem - M.Hounslow – personal communication). On the other hand, according to results from recent ammonite studies in Submediterranean/ Mediterranean sections, the lower boundary of the Bimammatum Subzone, *i.e.* the boundary with underlying Hypselum Subzone, seems to be founded on more diversified ammonite assemblage having a larger correlation potential than that at the boundary of the Bimammatum and Hauffianum subzones.

Of special importance for wider correlation is *e.g.* a change in the aspidoceratid fauna close to the boundary of the Hypselum (Semiarmatum) Subzone/Zone and the

Bimammatum Subzone/Zone (see *e.g.* Oloriz *et al.* 1999; and more recently Bonnot *et al.* 2009; Wierzbowski *et al.* 2010). The assemblage of aspidoceratids typical of the Hypselum Subzone/Zone represented by numerous *Euaspidoceras* is successively replaced in the upper part of the subzone by a new assemblage of *Clambites*, and then in the Bimammatum Subzone by *Aspidoceras* and *Physodoceras*. Although the detailed palaeontological and stratigraphical study of these ammonites in the crucial interval still needs further efforts, the results obtained so far are important for wider correlations. We need, however, new sections documenting in detail the ammonite succession from the Hypselum to Bimammatum subzones/zones in the Submediterranean/Mediterranean areas such as southern Spain, southern France, Italy or Romania.

The necessity of such studies reveals the recent stratigraphical research on Spiti Shales in Nepal by Enay (2009) who recognized: “the endemic character of Indo-SW Pacific forms (which) reduces possibilities for correlation and dating referring to the zonal standard scale established for Mediterranean Tethys and adjacent areas” (*op. cit.* p. 14). It should be remembered, however, that the forms in common with Submediterranean/ Mediterranean areas, appearing there (see Enay 2009) are mostly aspidoceratids such as *Euaspidoceras*, *Clambites*, *Aspidoceras*, *Pseudowaagenia* and *Physodoceras*.

As I wrote in the last report (Wierzbowski 2008), the problems which appeared with the Kimmeridgian GSSP could be solved during a future meeting of the Kimmeridgian Working Group, and such a meeting will be arranged in the future. Actually, however, the meeting, and discussion in that matter also took place during the Jurassic Congress in China this year, when (unfortunately with a limited number of the members of the Group) some general suggestions how to solve the

problem with GSSP have been undertaken. The new list of the members of the Kimmeridgian Working Group is placed currently in the website of the the ISJS: it includes all the colleagues who expressed they wish to participate in studies on stratigraphy of the Stage. The list is, however, still open for everyone involved in studies on stratigraphy of the Kimmeridgian and who wants to be a member. In the website I intend to present in future a list of more recent papers published (or being in print) which are related with stratigraphy of the Kimmeridgian Stage – so please send me the relevant data.

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WORKING GROUP ON THE KIMMERIDGIAN-TITHONIAN BOUNDARY

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Activities of the Working Group

As in many other fields of Earth Sciences the number of full-time researchers in the Jurassic has strongly declined. In the Kimmeridgian/Tithonian working group there are only few active scientists who are employed in universities, museums or geological surveys. Many of the members have meanwhile retired. Despite these unfortunate circumstances we attained some remarkable new results.

Argentina. A re-evaluation of the Tithonian ammonite faunas by H. Parent from Rosario and colleagues is in progress. Besides the stratigraphical analysis, some new oppeliid taxa were recognized within the material and described.

France. Due to misfortune, there has been no recent progress in respect of the description of the important Kimmeridgian/Tithonian boundary section of Canjuers.

Germany. Sampling of ammonites (by A. Scherzinger) from the Lower Tithonian has continued, and will allow a better understanding of the lineages of various Submediterranean perisphinctids. The correlation of the uppermost Kimmeridgian beds in Franconia with Subboreal areas is confirmed by the record of a new, still unpublished *Aulacostephanus* specimen.

Himalaya. Long retired but still very active, R. Énay presented his studies on the

Late Jurassic ammonite faunas from the Spiti Shales in Nepal, which highlight not only stratigraphic and systematic aspects but reflect also the palaeobiogeographic relationships of that area. We highly welcome this outstanding work which will surely have long-lasting influence over generations!

Hungary: I. Fözy, H. Parent and A. Scherzinger evaluated Tithonian ammonite faunas in the collection of the Hungarian Natural History Museum and in the field. As a first result they published a revision of the Tithonian ammonite genus *Virgatosimoceras*.

Mexico, Cuba & Caribbean areas: Revision of selected outcrops and ammonite assemblages is on course and several contributions are presently submitted for publication and were presented in the 8th International Congress on the Jurassic System to be held in China.

Romania: A monograph on Kimmeridgian/Tithonian ammonites from Romania by Dan Grigore will be published soon (comm. by M. Rogov).

Russia: Numerous results across the Kimmeridgian/Volgian boundary on the Russian Platform have been provided by M. Rogov and his collaborators (see literature below). Additional sampling activities in the Volgian type area were undertaken in 2009 by V. V. Mitta and A. Scherzinger.

Spain: In a similar situation as noted for France there is slow progress on the fine biostratigraphy and the revision of ammonite systematic in assemblages of the Kimmeridgian/Tithonian boundary, Beckeri-Hybonotum zones (PhD in progress by A. Serna under supervision of F. Olóriz).

New literature

Since the last message to the working

group several papers and abstracts dealing with late Kimmeridgian or Tithonian/Volgian biostratigraphy and stratigraphically relevant faunas have been published. Only those are listed which were communicated to the Convenor or the Secretary.

ÉNAY, R. (2009): Les faunes d'ammonites de l'Oxfordien au Tithonique et la biostratigraphie des Spiti Shales (Callovien supérieur – Tithonien) de Thakkhola, Népal Central. – Document des Laboratoires de Géologie Lyon, 166: 1-351.

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P. PRUNER, V. HOUŠA, F. OLÓRIZ, M. KOŠŤÁK, M. KRS, O. MAN, P. SCHNABL, D. VENHODOVÁ, J.M. TAVERA, M. MAZUCH. (2010): High-resolution magnetostratigraphy and

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**LES FAUNES D'AMMONITES DE
L'OXFORDIEN AU TITHONIEN ET
LA BIOSTRATIGRAPHIE DES SPITI-
SHALES (CALLOVIEN SUPERIEUR –
TITHONIEN) DE THAKKHOLA,
NÉPAL CENTRAL**

(Oxfordian to Tithonian ammonite faunas
and Biostratigraphy of the Spiti Shales
Formation (Late Callovian – Tithonian)
from the Thakkhola area, central Nepal.

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The present study is a monograph of the ammonite faunas from the Spiti Shales Formation of the Thakkhola area in central Nepal, based on new data. Studied material is from new samples with the best stratigraphical control as possible. Facies monotony and outcrop conditions result in stratigraphical accuracy far from that attained in Europe and other long-studies areas. However, new data from Nepal modify the traditional scheme inherited from V. Uhlig and established for the type-area of Spiti, in Indian Himalaya.

Publishing the present monograph on the Spiti Shales from Nepal just the year before the centenary of the publication of the famous monograph by Uhlig on "*The Fauna of the Spiti Shales*" (1903-1910) is just a coincidence, not a deliberate choice. Since it was published, Uhlig's work was the inevitable reference for all studies on Indo-SW Pacific faunas, but it was based on uncertain or weak field data. And more recent studies used it just as it is, or slightly modified, often on unreliable data.

In the first part of the monograph, the Spiti Shales Formation in Nepal is described, as well as the problems related to tectonics and the conditions of achieving the field work, during the four field journeys which enabled establishment of the faunal succession. Then, the studied outcrops and sections are presented from the south to the

north, an account which follows also the best stratigraphical order. For each section the collected faunas are described together with the data justifying the assumed biostratigraphical succession, and enabling anyone to find them again easily.

The result is a biostratigraphical sequence of nine faunal assemblages, each dominated by one single genus or a limited number of related genera, other associated forms being always subordinated to the dominating genus (or genera), whatever they are indigenous or episodic stragglers of exotic origin. The endemic character of the Indo-SW Pacific forms reduces possibilities for correlation and dating referring to the zonal standard scale established for Mediterranean Tethys and adjacent areas. A few and rares forms from European origin or relationship are the only supporting data for the ages hereafter assumed, which revised the ones assumed in previous papers (Enay & Cariou, 1997, 1999).

To the Oxfordian Stage are ascribed the Mayaitid Beds and Faunas. Rare Peltoceratids found not in situ prove the Lower Oxfordian is present but not identified in the field. Lower Mayaitid fauna with European Submediterranean Tethyan Perisphinctids (*Perisphinctes* s. st., *Arisphinctes*, *Dichotomosphinctes*) and indigenous Perisphinctids (*Praekossmatia* n. gen., *Zeissia* n. gen.), is dated as Middle Oxfordian. Upper Mayaitid fauna is dominated by Indo-SW Pacific Perisphinctids (*Sulaites*, *Praekossmatia* n. gen.), likely of Late Oxfordian age. The exact position of the Oxfordian-Kimmeridgian boundary remains uncertain because any succession is known displaying the passage beds with the next faunal assemblage.

Kimmeridgian Stage. The *Paraboliceras* Beds and Faunas were assumed to be Kimmeridgian in age in previous papers. The Lower *Paraboliceras* Beds yield the last Mayaitids together with the index

genus which is dominating in the Upper *Parabolicer* Beds. Associated fauna includes the new genus *Stevensia* n. gen., *Uhligit* and *Glochicer*, with species looking very near the European pair *Streblites-Crenicer*, and East Africa-Indo-Malagasian Perisphinctids (*Torquatisphinctes*, *Pachysphinctes*, and *Katrolicer*). The finding of *Hybonoticer* in the uppermost *Parabolicer* Beds is a major datum for situate the Kimmeridgian-Tithonian boundary.

Early Tithonian Substage begins with the *Kossmatia* Beds and Fauna, with a strict acceptance of the genus (excluding the so-called "*Kossmatia*" from North and South America). *Kossmatia* shows here a wide range of forms without any equivalent outside Nepal and almost exclusive of other taxa (very few *Pseudowaagenia*, *Physodoceras*, *Nebrodit*, and *Mesosimoceras*). Of Early Tithonian age are also beds and faunas previously dated as Late Tithonian? First, the *Virgatosphinctes* and *Aulacosphinctoides* Beds and Fauna, a homogeneous fauna, the more so as there is some doubt that some elements belong to that fauna, because they are known in upperlying beds and fauna. Then, the *Malagasites* and *Hildoglochicer* Beds and Faunas, of which the new genus *Malagasites* (= "*Virgatosphinctes*" gr. *denseplicatus*) is well-known in the Indo-Malagasian embayment and Antarctica. *Hildoglochicer* perhaps would be characteristic of a peculiar fauna (and horizon) with numerous Oppeliids (*Hildoglochicer*, *Metauhligit* n. gen.). Although there is some doubt on the genus assignment, "? *Semiformicer*" *aenigmaticum* n. sp. is a clue datum for dating the fauna as uppermost Early Tithonian.

Late Tithonian (*pars*). Ammonite bearing-beds of Late Tithonian age are not well developed in Nepal, being cut at top by terrigenous arrivals of the Chuck

Formation (or Unit). The *Blanfordicer* Beds and Faunas are characterized by an almost exclusively monogeneric fauna, with supposition that a few other genera (*Physodoceras*, *Corongoceras*, *Himalayit*) belong to that fauna. The last ammonite assemblage, the *Blanfordicer* and *Umiait* Fauna, is known in only one outcrop, in the uppermost ammonite-bearing deposits, already invaded by silty arrival.

Some dubiousness remains and proposed equivalences with the European Tethyan zonal standard are close estimates, already at the stage level, still more concerning zones. The faunal succession achieved in Nepal is the reference used to revise correlations, first with the Himalayan belt, in Pakistan, Indian Himalaya (Spiti, Kumaon) and southern Tibet; then towards east and more widely along the Indo-SW Pacific Province, Australasia (Sula Islands, Misol and Buru, Irian-Jaya and Papua-New Guinea), New Zealand, Antarctica and Magallanes Basin; at last towards west in the Indo-Malagasian embayment, in Kachchh (India), Malagasy, eastern Africa (Tanzania, Kenya, Ethiopia, Somaliland) and Yemen.

Facies of the Spiti Shales is relatively monotonous, black shales with more or less plentiful nodules, very hard and silica and pyrites rich. Published papers on deposition conditions from facies and microfaunas studies suggest environment with limited oxygen supply on a deep shelf or upper slope. Depositional environment of the Spiti Shales can explain why the organic carbon was preserved on an anoxic sea bottom associated with high planktonic productivity and high oxygen consumption, such conditions being connected with deep waters upwelling as those modelised on the southern Tethyan margin. The lack of a rich planktonic fauna in the sediments resulted probably of unfavourable embedding and fossilization conditions.

Scarcity or nearly lack of benthonic fauna agrees with depositional conditions of the Spiti Shales, as well as the ammonite faunas components. Referring to Ziegler's model and more recent somewhat different readings, the very subordinate part of the "Leiostraca" agrees with marine open sea environment on the distal platform and/or the upper slope, about 300 meters deep.

Studied faunas are often dominated by one single genus or little number of genera within a same taxonomic group. Those points out some endemism of the Himalayan faunas which is also traced in the Indo-SW Pacific faunas along the perigondwanan margin (Sula Islands, Papua-New Guinea, New Zealand) as far as Antarctica and Magallanes Basin. These faunas strongly contrast with the more diverse faunas which inhabited the Indo-Malagasian embayment (Kachchh, Malagasy, eastern Africa, Yemen), including a greater frequency of forms identified with or closely related to Submediterranean Tethyan taxa.

It is assumed that the Indo-Malagasian faunas were related to relatively shallower environmental conditions on the proximal platform, a picture which is consistent with evidences of shallowing of the Spiti Shales in the *Malagasites* Beds and the uppermost *Blanfordiceras* and *Umiaites* Beds. The low diversity of the Indo-SW Pacific Province was already interpreted as resulting from origination of an Austral fauna and Realm (or Subrealm) during Late Jurassic time.

- Systematic is the most important part of the book. It contains descriptions, discussions and/or revisions of 164 species (including those with open nomenclature) of which 43 are new species. They are included within 42 genera of which 6 are new genera e.g. *Metauhligites* (Taramelliceratinae), *Zeissia* (Passendorferiinae), *Praekossmatia*, *Nepalites* and *Stevensia* (Ataxioceratinae), *Malagasites* (Virgatosphinctinae). Many of

the already known genera are fully discussed or revised, e. g. *Uhligites* (Streblitinae), *Sulaites*, *Torquatisphinctes*, *Pachysphinctes* and *Katroliceras* (Perisphinctinae), *Paraboliceras* and *Kossmatia* (Ataxioceratinae), *Virgatosphinctes* and *Aulacosphinctoides* (Virgatosphinctinae), *Umiaites* (Proniceratinae) and *Blanfordiceras* (Berriasellinae).

Besides establishment of new taxa, faunas from Nepal enabled to confirm or recognize dimorphism with old known genera, for example *Kossmatia*, *Virgatosphinctes* and *Aulacosphinctoides*, *Blanfordiceras*, less surely *Umiaites*, as well within the new genera e. g. *Praekossmatia*, *Stevensia*, *Nepalites* and *Malagasites*. Save *Nepalites* who's the two dimorphs are described within the same species, also but with some doubt *Kossmatia tenuistriata* and *K. cf. tenuistriata*, dimorphs of a same genus are described as distinct species.

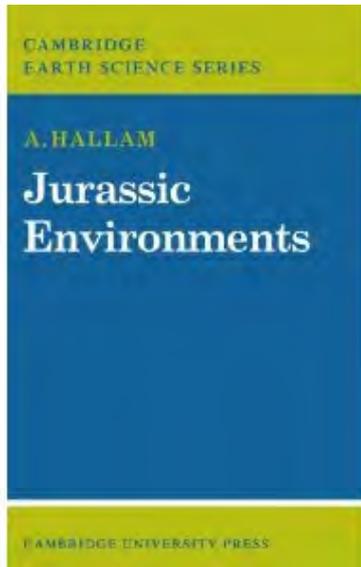
The monograph will be issue n° 166 in "Travaux du Laboratoire de Géologie, Lyon" and publication is expected for October 2009.

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John Hannes CALLOMON (1928-2010)

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Professor John Hannes Callomon (1928-2010) died on Thursday April 1st from cancer leaving his wife Esther and three sons, Peter, Martin and Paul. John declined rapidly, but in previous days he had managed to dig the garden and put his financial affairs in order; he was not one to allow illness to divert him from his work and would have been content to not remain incapacitated for any length of time. He asked that we remember him ‘in action, in the field’ so I will focus on just that. His funeral took place near his home at Brookmans Park on Monday 12th April. He was cremated and had asked that his ashes be cast from the top of Golden Cap in Dorset by his friends.

On March 13th I attended the 100th birthday of the Callomons’ lifelong friend Horace Sanders. John spoke for almost half an hour and gave a wonderful tribute to Horace and what he had done for him, but more on that later! In all but a slight roughness in his voice John was his old

self, explaining fluidly the working of machines that he and Horace had dismantled, Horace’s involvement in the invention of float glass and, of course, ammonites. On learning that he had only a short time to live John confided in Horace that he had no fear of death but bitterly regretted leaving life as there was so much in the Jurassic left to do. His last email to me was an invitation to look him up in the next life, so that we could carry on the good work.

I am not going to make extensive reference to John’s achievements. A more formal account will be prepared for the Geological Society by Hugh Torrens and another for the Geologists’ Association by John Cope, which I am sure will adequately cover these matters.

John was born in Germany on April 7th 1928 to Hans and Trudi Callomon. He arrived in England aged 9, with limited English. This did not hamper him for long and within a few years he had won a place at King Edward’s Grammar School in Birmingham, where he was a pupil from 1940 to 1946. His father, an electrical engineer, occupied a senior position on the staff of AEG in Berlin. The family foresaw the potential problems under Hitler’s regime and decided to come to Britain. Horace and Julie Sanders were living in Erdington on the east side of Birmingham in 1937 when they were approached by a local committee set up to welcome the influx of immigrants fleeing persecution, many of whom were Jews from Germany. Horace observed that “John soaked up knowledge like a sponge” and I know that John would gladly credit Horace as being the source of his excellent command and love of the English language and of his

lifelong fascination with engineering and geology. John was superb at explaining difficult concepts in a form that could be easily understood. He undertook to nurture anyone expressing genuine interest and prepared documents giving exact guidance on matters of geology, which in themselves are masterpieces of scientific endeavour. He celebrated the role of the amateur and tirelessly replied to every question asked of him.

In 1946, John won an Open Scholarship in Natural Science to St John's College, Oxford, leading in 1950 to a BA (first Class) in Chemistry. He followed this success with a Ph.D. in Infra-Red Spectroscopy in 1953. His time at St. John's was very precious to him and he recently fulfilled one of his last wishes - to once again spend a night in the college.

After completing a Post-Doctoral Fellowship in Ottawa, Canada, under Gerhard Herzberg, who later became a Nobel laureate, John joined the staff of University College London in 1955 as an ICI Fellow, becoming Lecturer in chemistry in 1957 and Professor in 1981. He remained at UCL until his retirement in 1993. He enjoyed working at the college and retained an office, storing specimens there for several years after his retirement. He maintained a connection with the university until his death.

John was known at college for his 'yellow submarine', a spectrometer built with his own hands in the sub-basement of the Old Chemistry Building in Gower Place. With it he made a number of new discoveries about the electronic structure of benzene and other organic compounds.

Together with Edgar Anderson, John was a founder member of 'Bentham Fine Chemicals', the Chemistry Department's fine wine society, a source of great enjoyment and camaraderie.

In his early years in England, John spent much time with Horace, who instructed him in lathe operation and car maintenance. John gained a sound understanding of the principles of engineering but more importantly developed an interest in fossils, firstly in the Palaeozoic Wenlock Limestone. Horace is responsible for another important aspect of John's life. He had taken John to Sweden, and was on a beach painting a boat when he met a young Swiss woman of 19 years old who was there studying English. He decided that a meeting should take place between Esther and his friend John. The couple were married on July 4th, 1953.

John moved to Oxford in 1946 and first became aware of William Joscelyn Arkell in 1947 before beginning study for his D.Phil. He regularly visited the galleries of the Oxford University Geological Museum and became well known to the curator, James Edmonds, subsequently a life-long friend. On one visit Arkell passed by and John enquired if it might be possible to meet him. Arkell was known to be a stern man who did not suffer fools gladly, but on meeting John he was so impressed that he invited him to his home at Cumnor where on taking his leave he presented John with a packet of reprints of his publications. One of these was his description of the ammonites of Woodham Brick Pit. There was no turning back! Plans were hatched to conduct work on the Oxford Clay. John never formally became a student of Arkell

but told me that he was proud to consider himself one. In the following years much new material came to light. Some of it seemed to extend what was described in the *Geology of Oxford* or the *Ammonites of the Corallian Beds* and occasionally it seemed even to call some of the identifications into question. So John wrote to Arkell then in Cambridge with reports of new discoveries and many queries on things he did not understand. There came replies invariably within a few days dealing in full with all the points he had raised and expressing genuine interest in what was new, with comments on its wider implications.

From the collections he made John developed theories on dimorphism in ammonites. He visited 'Faraway', Arkell's country home at Ringstead in Dorset, in 1955 for an extended visit and told me that he there assisted Arkell in the completion of *Jurassic Geology of the World* (1956).

In 1972 I attended a lecture at which John spoke on the topic of sexual dimorphism in ammonites. I wrote to him about dimorphism in graphoceratids and received an instant reply asking if he could make a visit to my collection. There started our relationship. He was somewhat grieved that his paper on sexual dimorphism (1963) had been delayed in its publication by matters outside his control. In 1955 (by Arkell) and in 1957 he had made his findings known and had his work ready for publication in 1958. He believed that the delays had put him in second place in identifying that ammonites had separate sexes. Makowski's paper has priority on this topic, but John was truly the founder of the theory of sexual dimorphism and the originator of the widely used terms

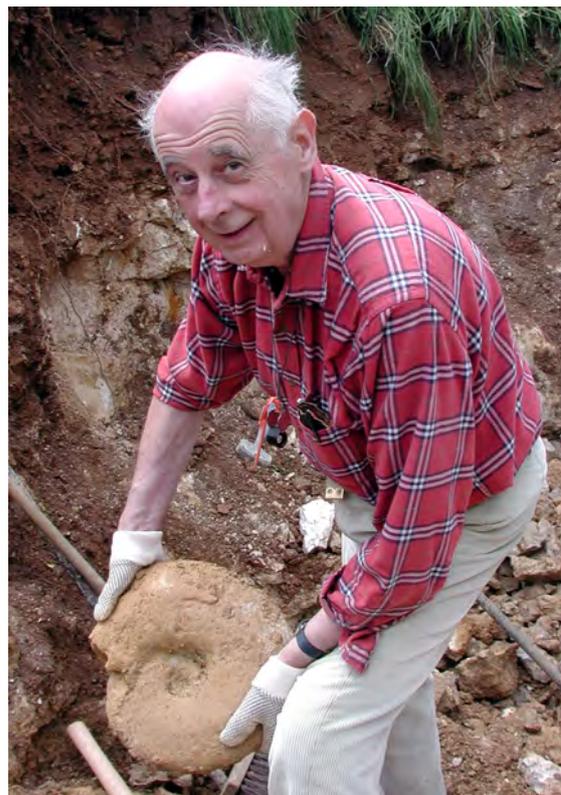
'macroconch' and 'microconch' (presumed female and male respectively).

Colin Parsons' work from the late 1960s had already aroused John's interest in the *Inferior Oolite*. Following our first meeting John and I made regular excursions to Dorset (referred to by John as 'The Front') in his car. At each location John would assemble 'The Office'. This normally consisted of a tree trunk or piece of discarded wood that would serve as a desk and upon which the 'library' would be laid out, comprising a collection of reference material, often including originals of books from his collection; Buckman's Type Ammonites was a regular visitor! The books, reference specimens and paraphernalia of palaeontology would arrive in clean wooden wine boxes, the residue from recent activity of Bentham Fine Chemicals. Next he would draw a section of the exposure based on our efforts at clearing the face. My helpers soon joined us on such visits. Andrew England and William Jones acted as our quarrymen. John saw the degree of organisation that went in to each visit as rather amusing, especially the special tools and, more importantly, the good accommodation with fine dining. We became experts on where to send geological parties for a welcome night's rest. John suggested we called ourselves the Wessex Cephalopod Club, a name by which we continue to be known today. The members were toasted by John at his retirement dinner at University College in 1993.

John was interested in intraspecific variability in ammonite shells. His paper on *Cardioceratids* (1985) gives excellent illustrations of fauna from successive

horizons with the variability at each level depicted with every intermediate. He stated that variability was far more easily discerned by good illustration than via mathematical criteria: “You can identify your mother amidst a crowd of thousands; however, to produce a set of figures with similar precision would be impossible.” He was meticulous with his stratigraphical control, always ensuring that specimens were correctly marked with the beds from which they came. We compiled ammonite morphospecies lists from single faunal horizons in the Inferior Oolite that approximate to isochronous assemblages; the closest we can hope to get to the interpretation of a palaeobiospecies and the highest resolution using biochronology. The assumption is that the period over which the ammonites accumulated (taking in to account other factors) was insignificant over geological time, and members of an intergrading ammonite fauna were thus likely to be monobiospecific. Each horizon could therefore be assembled into its relative position, providing a time scale based on ammonite evolution capable, in John’s view, of discriminating with a mean resolution of about a hundred thousand years.

John was aware that ammonite variability extends both in space and time and that one particular morphospecies could have a considerable vertical range. Many old specimens in museums lack precise provenance, and John coined the term ‘potatoes’ to describe such objects. By comparison with controlled new discoveries, the probable type horizons could be discovered and new life thereby breathed into the potatoes.



John Callomon [microconch] and Fissiloboceras fissilobatum [macroconch], Dundry 2006

By 1986 we had gained access to most of the classical sites in Dorset and Somerset and had made extensive collections of ammonites. The time had come to publish our attempt at a ‘bottom up’ subdivision of strata, ‘A revision of the ammonite faunal horizons of Dorset and Somerset’ (1990). We introduced alphanumeric codes for the horizons and abbreviations for the localities. Updates and other discoveries followed and continue still. When John first encountered the Inferior Oolite of Dorset and saw the particularly condensed nature of it he stated “that nobody would ever sort that out! “ By 2010 he had made a very significant attempt!

John travelled widely, advancing the sum of our knowledge of Jurassic ammonites. He participated in field excursions to the Yukon (1975) and Spatsizi Quadrangle in

northern British Columbia (1989). He visited Tsatia Mountain, accessed from Tatogga Lake Resort in British Columbia, with a geological party including Russell Hall and Terry Poulton, who recall that the group had been given the contents of the lodge's refrigerator for a barbeque dinner. John had disappeared and as the moose ribs were browning, he appeared out of the misty spruce forest around the lake with a metal bucket filled to the brim with large, flat mushrooms. He declared "that they were not poisonous, and would be great to accompany the moose." The group cautiously nibbled at the mushrooms until John had eaten a good number of them. Seeing that he had not collapsed, everyone continued to enjoy their meal. Terry recalls that John had collected mushrooms during his Edmonton days, but had the impression he knew enough about their taxonomy and chemistry to be quite confident about their lack of toxicity based on similarities with European species. He used English, Swiss or German names for them; another area in which he was an expert.

John assisted in making important collections in Kutch, Gujarat, India with the University of Würzburg (1990-94). Little had previously been reported from these remote exposures of Middle Jurassic strata. He reported the Bajocian ammonite *Haplopleuroceras*, in Britain an excellent marker species at the Aalenian-Bajocian transition and therefore an important tool for correlation with the Kutch succession. The collections he made there remain of considerable interest.

Following retirement John continued his detailed biostratigraphy of the Jurassic, which included what he called 'palaeopolitics' and which he felt was a

rather oversubscribed diversion to the business of studying rocks. Much effort centred on the designation of GSSPs, about which John stated that the essential feature of the GSSP for the Bajocian at Cabo Mondego was the fact that it had a nice climate and a good fish restaurant nearby.

John also had a particular interest in the geology of Greenland beginning in 1957 when he had the good fortune to become part of an expedition run by Lauge Koch, the renowned Danish geologist and explorer. He was particularly interested in the family *Cardioceratidae* and had collaborated with Tove Birkelund on the ammonites of Jameson Land. His last field trips to East Greenland took place in 1994 and 1996. The research provided very valuable ammonite specimens that remained a subject of his studies until his death. Over many years he worked on the collections at the Geological Museum in Copenhagen, the repository of his and earlier workers' East Greenland collections. He took charge of the organisation of the collection, which remains one of the best curated in the Museum. For his outstanding contribution to Greenland geology he was awarded, in 1993, the Steno Gold Medal of the Danish Geological Society.

Apart from his work in Chemistry and Geology John maintained a post as a school governor at his local comprehensive for over thirty years, and held a strong commitment to sound basic education. He believed in a firm grounding in basic skills (now called STEM – Science, Technology, English and Maths) but had absolute contempt for the cascade of new initiatives that successive governments continue to inflict on the education system. Being an

extremely competent mathematician he would constantly probe the imperfections of the data supplied to schools and parents. He was always optimistic and predictable in his response to certain matters. Departing from tradition of a Christmas scene, his Christmas card for the last thirty years has depicted various views of University College. Last Christmas was a break from tradition with a picture of him mounting the summit of the Allalinhorn in Switzerland. He treated everyone with absolute respect and had a unique way of making one feel at ease in his company. He had a way of letting you know his feelings without saying much –“Ah yes!” said more than a thousand words! Aware that he was unlikely to be corresponding with friends again, he ended his mail with “Signing off and out!” He may have signed off but the contribution he has made will continue. I am so privileged to have encountered John, a true polymath, and honoured to have been allowed to produce this account. I am forever indebted to him for the unstinting guidance, friendship and help he has given me and others who have encountered him.

Robert Chandler

April 2010

Acknowledgements.

I am indebted to Esther, Peter, Martin and Paul Callomon for making their private history available. Horace Sanders for an account of John’s early life and Carol Payne for gathering information. Contributions have also been made by Peter Alsen, Edgar Anderson, Elizabeth Carter, John Cope, Russell Hall, Hugh Torrens and Terry Poulton.

CELEBRATING THE 85TH BIRTHDAY OF BARNABÁS GÉCZY

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In September 2010, the Hungarian Academy of Sciences organized a half-day meeting to celebrate the 85th birthday of Barnabás Géczy, ordinary member of the Academy. The event was attended by many colleagues, friends, and students of the doyen of Hungarian Jurassic stratigraphy.



Barnabás Géczy is well known to the international Jurassic community as a prolific author on Jurassic ammonite taxonomy and biostratigraphy. His meticulous works on Lower and Middle Jurassic faunas of Mediterranean affinity from the Bakony Mountains stood the test of time and are still well-used today, more than half a century after he published his first paper on this topic in 1958. His monographs on the ammonite fauna of Csernye (1966, 1967) and the Carixian

ammonites of the Bakony (1976), were followed more recently by those on the Domerian (1998) and the Sinemurian (2007) faunas, these latter in collaboration with Christian Meister.

However, in Hungary, Professor Géczy is even more widely acknowledged as an extremely influential teacher. The speakers of the anniversary conference were from among his students, who demonstrated how successive generations of students built upon the foundation of his works and inspiration. András Galács emphasized the novelty of careful, bed-by-bed collecting as the cornerstone of modern ammonite biostratigraphy, pioneered in Hungary by Géczy. Attila Vörös summarized the history of research at the classical Jurassic locality of Villány, from the beginnings at the turn of the 20th century to a recent synthesis, including the role of Géczy and the famous field trip during the Colloquium on the Mediterranean Jurassic in 1969, when the insights of John Callomon and Derek Ager led to the revision of the age of Lower Jurassic strata underlying the exceptionally fossiliferous Callovian bed. Ferenc Horváth, a prominent geophysicist, revisited Géczy's milestone 1972 paper, in which he first recognised the anomalous distribution and paleobiogeographic affinities of Jurassic faunas in Hungary, leading to the first formulation of a modern plate tectonic interpretation of the structure of the Pannonian Basin within the Alpine-Carpathian orogen.

In the absence of a paleobotanist at the university, Professor Géczy, wrote a 356 page textbook on paleobotany in 1972. It is still in use, and Lilla Hably, a distinguished paleobotanist emphasized how the entire, very active and productive Hungarian paleobotanical community was raised on this book. Miklós Kázmér, who is now the successor of Géczy as head of the Department of Paleontology at Eötvös University in Budapest, characterized the

years of Géczy's headship in the 1970's and 1980's as the second golden age of Hungarian paleontological and geological higher education. A lasting achievement is the series of textbooks authored by Géczy which, beside the Paleobotany text, includes several editions of General Paleontology, Invertebrate Paleontology, and Vertebrate Paleontology.

Virtually every Hungarian paleontologist today has learned from these texts. A number of us even consider ourselves as members of the close-knit „Géczy school”, devoted to studies of Jurassic (and other Mesozoic) marine invertebrate faunas. Indeed, the conference very much resembled a school reunion. It ended with a reception, where old schoolmates could catch up with each other, told stories to today's university students, and enjoyed a chat with their master teacher in a friendly, familiar atmosphere. We all wished Barnabás Géczy health and happiness for years to come. I trust I can extend all these good wishes to him here, on behalf of the entire Jurassic community.

M. COLLIGNON AND THE BATHONIAN OF MADAGASCAR

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Recent paper on Bathonian ammonite assemblages from Kutch (India) get us an opportunity to come back again on the comment we wrote twice on the erroneous interpretation of Collignon's data concerning Bathonian of Madagascar and the precautions to be taken when using such data.

Pinaki ROY, Subhendu BARDHAN, Aparajita MITRA, Sudipta K. JANA (2007), in their paper "*New Bathonian (Middle Jurassic) Ammonites Assemblages from Kutch, India*" (Journal of Asian Earth Sciences, 30, 629-651), put forward correlations between Kutch and Madagascar. With some few differences, the succession of faunal horizons in Madagascar in tab. 1 is the same as the one exposed by Westermann & Callomon (1988, tab. 1).

Already, on two occasions (Enay & Mangold, 1994; Enay *et al.*, 2001), we show that these horizons and succession disagree with Collignon's original data (1964) to which the authors refer, and they are very free in their interpretation of the published data. Probably the French language used in our paper explains why these comments escaped notice of the already quoted Indian authors. Moreover, Westermann and Callomon being authoritative in the matter, it was probably justified for the readers to not go back to Collignon's original data.

So we are obliged to come back on the way by which the authors as a rule use Collignon's papers compared to what it is possible to do when they are more strictly used. Thus, most papers on Madagascar

refer nearly exclusively to Collignon's master-work his "*Atlas des fossiles caractéristiques de Madagascar*" (Collignon, 1958), with numerous plates of ammonites. On the contrary, other of Collignon's papers containing more complete data on stratigraphy, practically missing in the Atlas (except for information on stage and zone), are generally omitted or wholly unknown.

Comparison (if not collation) of data from the papers on stratigraphy and those from the Atlas bring new and valuable information, with certain reservations about some traps.

This restatement gives us the opportunity to take into account the unfigured material of Collignon's collection preserved at Dijon (University of Burgundy) and the review, when necessary his determinations, particularly those concerning the subgenus *Procerites (Gracilisphinctes)*.

Another important aspect of the discussion concerns the genus *Micromphalites* and the age of its various species from type-area (England) and the areas where they were described, quoted or/and figured.

I – ABOUT COLLIGNON'S PAPERS.

1. Atlas des fossiles caractéristiques de Madagascar (Collignon, 1958)

Already, concerning the Atlas, some surprises might happen and it has to be used in a critical way. Here is just an example that concerns the Bathonian but others exist on Late Jurassic faunas. From the Atlas, it is easy to obtain lists of figured species for each locality or outcrop (that they might be critically revised that quotation in a list without figures does not allow).

First, we briefly recall the divisions of the marine Bathonian of Madagascar following Collignon (1958, 1963 b, 1964). The Upper Bathonian was divided into two zones: the *Epistrenoceras histricoides*

Zone overlying the *Micromphalites hourcqi* Zone. Below, the Middle Bathonian is represented by the only one *Procerites (Gracilisphinctes) progracilis* Zone.

For instance, *Gracilisphinctes* aff. *progracilis* Cox & Arkell, the only one specimen referred to the Middle Bathonian zonal index-species being figured (pl. 7, fig. 34), is quoted from Andranomavo (locality 71)¹. The same locality yielded also: *Micromphalites Hourcqi* (pl. 9, fig. 47), *Subgrossouvria rakotondramazvai* (pl. 11, fig. 60), *Alcidia obsoleta* (pl. 10, fig. 52) and *rigida* (pl. 10, fig. 53).

Thus, *Gracilisphinctes progracilis* is dated as Middle Bathonian (Progracilis Zone), whereas other species of the same locality are dated as Late Bathonian, Hourcqi Zone! The explanation is easy: in the opinion of Collignon, *Gracilisphinctes* is a Middle Bathonian genus and so he was in strict conformity with age of the other figured species of *Gracilisphinctes* in the locality Andranomantsy I (pl. 6 and 7, fig. 31 to 36).

2. Other stratigraphic papers by Collignon (1953, 1959, 1963 a, 1963 b, 1964)

These papers, some published before, others after the Atlas, bring equally surprising data about the beds here discussed and especially the area around Andranomantsy (Diego Suarez).

- In 1953, the locality "south of the Rodo valley (...) East of Andranomantsy" is quoted for the first time and the faunas of "the highest part of the Middle Jurassic" are listed following their systematic placement into families, without any

¹ There is no inconvenient that locality 71 would be quoted as Mahabo-Namuroka (Soalala) and Andranomavo (Soalala) both for locality 71 and 50 on another plate because they are close in the same Ambongo area (Collignon, 1964).

reference to a succession of beds. Data are based in a large part on J. de Saint-Ours collecting, not stratigraphically divided.

- In 1959, "an upper level" is distinguished with a new species of *Delecticeras (D. anjohense* Coll., 1958, pl. 9, fig. 48) at Mont Anjoho (locality 616 in Collignon, 1958) and some other localities.

- It is only in 1963, in the two papers presented during the "Semaine géologique de Madagascar" (Collignon, 1963a, 1963b), from new field observations in the Andranomantsy area (Collignon, 1963b, p. 158), that two levels are distinguished: a lower level with *Clydoniceras* and *Micromphalites*, very numerous *Gracilisphinctes* and all the phylloceratids "previously quoted" (? in 1953); an upper level with *Epistrenoceras*, *Oxycerites*, *Bullatimorphites* and rare *Macrocephalites triangularis* and *formosus* Sow.² (Collignon, 1963a, p. 147).

The unexplained quotation of Andranomantsy I and II (Collignon, 1963 b, p. 158) refers to the paper presented to the 1st Jurassic Colloquium (Luxembourg, 1962), published only in 1964.

- During the 1st Jurassic Colloquium in Luxembourg (Collignon, 1964), two successive faunal assemblages are described as Andranomantsy I, ascribed to Middle Bathonian, and Andranomantsy II, ascribed to Late Bathonian, and so made clear these indications previously used in the Atlas (Collignon, 1958) and in one of

² Later, Andranomavo is the only one locality for which Collignon (1964, p. 917) maintain occurrence of Macrocephalitids within the *Micromphalites* Beds with *Dolikephalites* aff. *typicus* (1958, pl. 11, fig. 59). Concerning all the other localities (Andranomantsy II, Soarakively), after having only supposed possibility of "mixed faunas" (Collignon, 1963 a, p. 146), he confess that the Macrocephalitids found with the Bathonian species are specimens collected not in situ (Collignon, 1964, p. 916-917).

the above mentioned papers (Collignon, 1963 b).

It is just the paper on which Westermann and Callomon (1988, tab. 1 and notes 26-29) based their sequence of (pseudo)horizons. But most of the data were already published (Collignon, 1963 a).

II - COMMENTS ON COLLIGNON'S COLLECTION MATERIAL.

Examination of Collignon's collection concerns both the specimens figured in the Atlas and some of the unfigured specimens, especially of the genera/subgenera *Procerites* and *Gracilisphinctes*.

1. *Procerites* (*Gracilisphinctes*) from Madagascar.

First, *Gracilisphinctes* aff. *progracilis* Cox & Arkell in Collignon (1958, pl. 7, fig. 34) is an involute form (O/D : 0, 28 at D : 140 mm, from the fig.) which looks close to specimens of *P. arkelli* Coll. from Kutch (O/D between 0,25 and 0,35) studied by Pandey & Callomon (1995, p. 130). Whorl section offers the same general aspect as Sandoval's *Procerites* sp. 1 or *P.* aff. *progracilis* (1983, pl. 44, fig. 4) from the uppermost Middle Bathonian Costatus Zone, with the same large ventral area and involution ratio (O/D : 0, 25).

Then, two other specimens determined as *P.* aff. *progracilis* are from the same locality 71 (Andranomavo). The costulation, whorl section and involution rate (O/D: 0, 33 at D: 210 mm; 0, 29 at D: 180 mm) are consistent with the variability of *P. arkelli* established by Pandey & Callomon (1995).

Locality 108 (= Andranomantsy I; "Progracilis Zone" of Collignon) yielded *Wagnericeras boissieri* n. sp. in collection (O/D between 0, 29 and 0, 32), and *G.*

mirabilis in collection (O/D between 0, 32 and 0, 34). These two specimens may be assumed as *P. (G.)* cf. *mirabilis* Ark. (1957, pl. 28, fig. 7) near forms of the basal Upper Bathonian (Retrocostatum Zone, Blanazense Subzone, Quercinus Horizon).

From the same locality 108, Collignon's collection includes two undetermined specimens that are in fact *Procerites arkelli* Coll. This species is also represented at the locality 50 (Mahabo) of the same age.

2. *Micromphalites* from Madagascar and other places.

2.1. Collignon's *Micromphalites* new species.

Examination of all Collignon's material brings some doubt on validity of the species distinguished by Collignon: *M. golenkoi* may be the adult form of *M. hourcqi*, and locality 71 (Andranomavo) yielded a panel of forms connecting this species with *M. saintoursi*. The latter species is different from *M. golenkoi* by the adult stage occurring later.

The only one *Micromphalites* figured from Andranomantsy I (locality 108) is the type specimen of *M. saintoursi* (Collignon, 1958, pl. 9, fig. 45) from the top of his so-called "Progracilis Zone", but several specimens of the *hourcqi-saintoursi* group are preserved in Collignon's collection. *Micromphalites* are "very numerous" (Collignon, 1964) in the Ambongo area (Andranomavo, Mahobo = localities 50 and 71), showing a variety of morphologies connecting the "species" *M. saintoursi* and *M. hourcqi*.

2.2. Discussion on the ages of *Micromphalites*.

In England (Arkell, 1951, p. 47) *Micromphalites* is known by nine specimens and two fragments, all coming from the 'Stonesfield Slate' (Progracilis

Zone) and just below *Tulites* which characterizes the overlying Subcontractus Zone.

In Saudi Arabia, Arkell (1952, p. 297) distinguished three successive faunal assemblages in the Middle Dhurma Formation, characterized respectively by the genera *Thambites*, *Tulites* and *Micromphalites*. Only the two last genera concern the Bathonian Stage and here *Tulites* is below *Micromphalites* instead as being just above as it is in England.

So, Arkell assumed that if the Early Bathonian age established for his new species, *M. busqueti*, by de Grossouvre (1919, in the Nièvre Département, is correct, "there is in Arabia an inversion of faunas" and he added "rather than accept this conclusion it is better to assume provisionally that the unique holotype of *M. busqueti* really came from a higher bed than de Grossouvre supposed". Now, Mouterde (1953) confirmed the Early Bathonian ages of the corresponding beds and recently Enay et al. (2001) ascertained the position of *Micromphalites* from Nevers area in the Zigzag Zone, Macrescens Subzone.

Pandey and Callomon (1995) rely on the assumption that the *Procerites* and *Micromphalites* from Kutch are from the Progracilis Zone, as they are in Europe, and assume the same age to those of Madagascar, India and Saudi Arabia. For them the inversion of the *Tulites* and *Micromphalites* faunas could be explained by a larger extension of *Micromphalites* in Saudi Arabia than it is in Europe and by a supposed later Middle Bathonian age of *Tulites*.

The oldest known *Micromphalites* is probably from the Convergens (or Parvum) Subzone of the Zigzag Zone in the Nièvre Département (? *M.* sp. in Enay et al., 2001, p. 517, pl. 1, fig. 10). The authors proved that the greater part of known *Micromphalites* are from the Zigzag Zone,

not only in the Nièvre département, but also in Morocco, and Saudi Arabia. Moreover, Torrens (1987) quoted *M. cf. clydocromphalus* (= *M. torrensi* Enay et al., 2001) from the latest Early Bathonian (Aurigerus Zone, Tenuiplicatus Subzone). *Micromphalites* was recorded later than the Progracilis Zone, in the Bremeri Zone, Fortecostatum Subzone with the type-species of the genus in Southern French Jura mountains (Mangold, 1970) and *M. n.* sp aff. *micromphalus* and *M.* sp. in Tunisia (Soussi et al., 1991, 2000) and Portugal (Elmi et al., 1971).

In Madagascar and Kutch, *M. hourcqi* (= *M. golenkoi*) and *M. saintoursi* are diagnostic species of Late Bathonian age (Hourcqi Zone).

2.3. Other specimens from Collignon's collection.

From locality 108 (Andranomantsy I), dated "Progracilis Zone" and top part of the Middle Bathonian by Collignon, *Oxycerites rodoensis* Coll. (pl. 10, fig. 50) looks like a *Prohecticoceras* of the *ochraceum* group (late Middle Bathonian or Early Late Bathonian) by the ornamentation and shape of the ventral area. From the same locality, Collignon's Atlas displays *Oxycerites besairiei* Coll., *Clydoniceras madagascariense* Coll., together with *Micromphalites saintoursi* Coll.

4. Conclusions.

The Malagasian specimens of the genera *Procerites*, *Micromphalites* and *Clydomphalites*, just as *Prohecticoceras* gr. *ochraceum* Elmi (= *Oxycerites rodoensis* Coll.) indicate a later age than that of the English Progracilis Zone. These taxa and their species have large ranges and most of them reach at least the top of the Middle Bathonian and perhaps the bottom of the Upper Bathonian in the Submediterranean Standard Scale (Retrocostatum Zone, Blanazense Subzone, Quercinus Horizon).

Thus, the basal boundary of the Collignon's Hourcqi Zone would to be placed at the base of the Retrocostatum Zone (Quercinus Horizon). So determined, the zone would encompass the whole Upper Bathonian up to the overlying Triangularis Zone, but there is no evidence for a Discus Zone equivalent. Following Collignon (1964), a Histricoides Subzone corresponding to his "terminal level" (1959) may be acceptable.

III - FAUNAS of COLLIGNON vs "HORIZONS" of WESTERMANN & CALLOMON

In his 1964's paper, Collignon described, first the Middle Bathonian (his so-called "*Gracilisphinctes progracilis* Zone"), then the Late Bathonian (*Micromphalites hourcqi* Zone). Concerning Late Bathonian, it is clearly mentioned that the localities are described from north to south. They are unconnected localities or outcrops, very far from one another and spread on more than 1500 km (Fig. 1).

Collignon's localities are dealt with by Westermann and Callomon as biohorizons within the Hourcqi Zone, more or less stratigraphically distant, from top to bottom, horizons a' and a in the upper part and c, d, e in the lower part of the Hourcqi Zone, the latter being underlain by the Progracilis Zone and overlain by the Triangularis Zone.

The order given to the so-called "horizons", from top to bottom, is exactly the order used by Collignon to describe the fauna from North ("horizons" a' and a) to the South ("horizon" e). These pseudo-horizons are placed within Collignon's Hourcqi Zone, but Westermann & Callomon's concept of the zone is more extended because their horizons are distributed in the upper part of Submediterranean Middle Bathonian and the Late Bathonian.

A critical review of Collignon's 1958 Atlas and other papers, as well as examination of specimens in his collection housed in the University of Dijon, figured as well as non-figured specimens, has resulted a quite different interpretation. Following the stratigraphic order of the "pseudo-horizons" in Westermann and Callomon:

- "Horizon" e) (Mont Anjoho, Betsioky) and d) (Soaravikely, Ankilizato): one species common to the two localities, *Cadomites daubenyi* (which looks near *Cadomites bremeri*), a new species *Delecticeras anjohense* Coll. and *Grossouvria* cf. *graciosa* in e), *M. hourcqi* in d), do not justify two distinct horizons. Soaravikely yielded the type specimen of *Micromphalites golenkoi* (Collignon, 1958, pl. 9, fig. 46), collected by N. Golenko (1955).
- "Horizon" c) (Ambajabe), above the *Gracilisphinctes hindermeyeri* Coll. (*nom. nud.*) Beds ascribed to the Middle Bathonian, the assemblage dated as Late Bathonian includes *M. hourcqi*, *Oxycerites obsoleta*, *Procerites* sp. (= *Wagnericeras dietrichi* Coll., 1958, pl. 7, fig. 37), *Procerites* sp. juv. (= *Gracilisphinctes lemoinei* Coll., 1958, pl. 7, fig. 35, a species also quoted in the Middle Bathonian), *Homoeoplanulites* sp. (= *Siemiradzka aff. demariae*)
- "Horizon" b) (Mahabo and Andranomavo = outcrops 50 and 71): *Gracilisphinctes* aff. *progracilis* Cox & Arkell (Collignon, 1958, pl. 7, fig. 34) from Andranomavo, date as Middle Bathonian (see here above), is associated with *M. hourcqi* (pl. 9, fig. 47) and some other species dated as Late Bathonian, *Subgrossouvria rakotondramazavai* (pl. 11, fig. 60), *Oxycerites obsoleta* (pl. 10, fig. 52) et *rigida* (pl. 10, fig. 53).
- "Horizon" a) and a' (Andranomantsy II = outcrop 109): the only one locality with a suitable sequence of fauna, in the Diego Suarez area, in the North part of

Madagascar, which is the consistent place for having the most obvious marine deposits. From top to bottom:

- Andranomantsy II (outcrop 109), Late Bathonian, with two levels:

- At the top, a few metres thick, with *Kheraicerias bullatum* (pl. 11, fig. 53) would have yielded *Micromphalites* sp. (= Horizon a', à *Micromphalites* + *Kheraicerias*, in Westermann & Callomon). But the 1953 paper's list does not distinguish two successive levels and about *Micromphalites* sp. it is indicated "1 ex." which was not found in Collignon's collection.

- At the basis, one metre thick bed with numerous *Epistrenoceras histricoides* (pl. 8, fig. 42-44) and *Oxycerites aspidoides umbilicata* (pl. 9, fig. 49), *Paroecotraustes collignoni* Stephanov, 1966, = *P. serrigerus* (pl. 10, fig. 54), *Bullatimorphites* aff. *suevicus* (pl. 11, fig. 55) and cf. *uhligi* (pl. 11, fig. 56). That is the *Epistrenoceras histricoides* Subzone (Collignon) or Horizon (Westermann & Callomon).

- Andranomantsy I (outcrop 108), top of Middle Bathonian, Collignon's *Gracilisphinctes progracilis* Zone.

- The list of fauna from the Atlas includes: *Micromphalites saintoursi* (pl., 9, fig. 45), *Gracilisphinctes arkelli* (pl. 6, fig. 31-33), *lemoinei* (pl. 7, fig. 35), *andranomantsyensis* (pl. 7, fig. 36), *Procerites* sp. (= *Wagnericeras dietrichi* Coll., pl. 7, fig. 39), *Clydoniceras madagascariense* (pl. 9, fig. 44), *Prohcticoceras* of the *ochraceum* group (= *Oxycerites rodensis* Coll., pl. 10, fig. 50), *besairiei* (pl. 10, fig. 51), *Bullatimorphites* cf. *suevicus* (= *Schwandorfia boulangeri* Coll., pl. 11, fig. 58).

- Collignon's collection contains: very numerous *Micromphalites*, with a large range of morphologies connecting *M. saintoursi* and *M. hourcqi*, as well as *Alcidia obsoleta* et *rigida*, species known in the locality 50 (Andranomavo). The same horizon is much less rich, but seemingly occurs locally towards south, including *Procerites* and/or *Gracilisphinctes*, at Ambajabe (*G. hindermeyeri* Coll. nom. nud.), Onilahy-Tongobory (*P. hians*) and Aontzy-Ampakabo (*P. sp. aff. magnificus*).

IV – MARINE BATHONIAN OF MADAGASCAR REVISITED.

As a result of the review of Collignon's published data and collection:

1. The marine Bathonian deposits of Madagascar have their best development in the Diego Suarez (now Antseranana) area, in the localities Andranomantsy I and II. They are characterized by a rich fauna of *Gracilisphinctes* and *Micromphalites* of the *hourcqi-saintoursi* group, associated with other more or less significant forms, as *Oxycerites*. This assemblage corresponds to Collignon's Hourcqi Zone, which start with upper Middle Bathonian (Bremeri Zone, Fortecostatum Subzone), but the age is mainly Late Bathonian.

2. Late Bathonian really only occurs at one locality, Andranomantsy II (with *Epistrenoceras histricoides*), in good agreement with the situation in the north of the island. This level can be separated as the Histricoides Subzone (Collignon) or Horizon (Westermann & Callomon) within the Hourcqi Zone. In other parts of Madagascar and as far as south of the Onilahy river (Mahabo-Andranomavo, Ambanjabe, Soarakively-Ankilizato, Onilahy-Tongobory) ammonite faunas are scarcer and less diverse, but are of the same age. Corresponding continental deposits are sandwiched between continental beds with dinosaurian of Early Bathonian age following Collignon (1964),

perhaps also of Middle Bathonian age, and the Corbula Beds ("Couches à Corbules") with chelonian remains for which Basse (1935), Bésairie (1936) and Collignon (1963, 1964) assumed a Middle-Late Bathonian age.

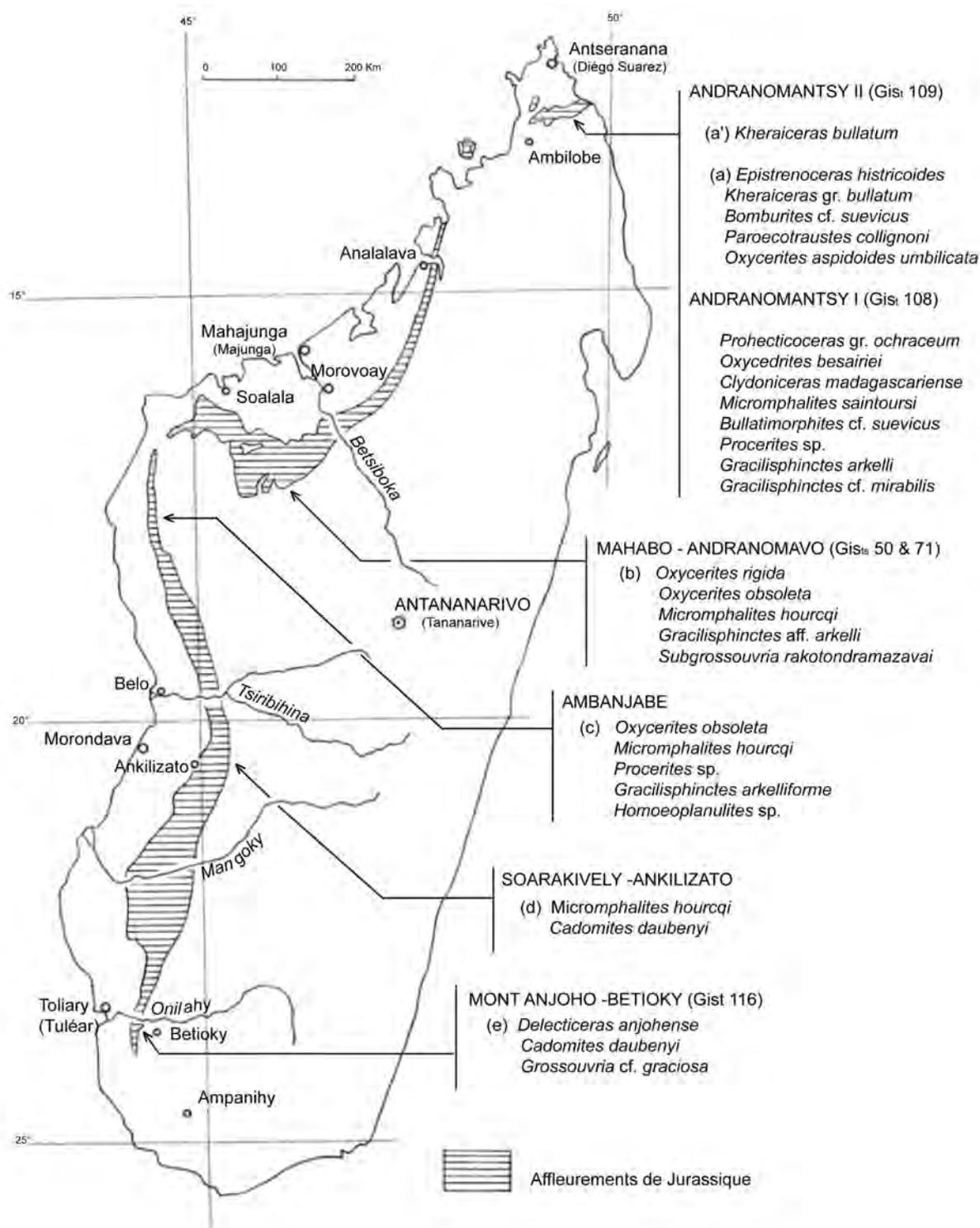
3. Even if the ages are not strictly the same, it is at least premature to take the outcrops and/or localities numbered by Collignon as a sequence of horizons (except the *Epistrenoceras histricoides* "horizon" at Andranomantsy II). They are more or less of the same time span and belong to only one and same fauna, the *M. hourcqi* fauna, which is equivalent with the upper part of the Submediterranean Middle Bathonian (Bremeri Zone, *pars*) and a great part of Upper Bathonian (Retrocostatum Zone).

4. Part of the Upper Bathonian, located below the *Epistrenoceras histricoides* Beds, which is known in only one locality, is not characterized in the Andranomantsy sequence of rocks. This level corresponds perhaps to an independent marine interval of the Late Bathonian transgression and more directly linked to the following Callovian transgression.

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Sketch-map of Madagascar showing outcrops of Jurassic rocks and emplacements of the Bathonian ammonite faunas quoted by Collignon from the north to the south. a) to e) “horizons” following Westermann & Callomon (1995).

**REPORT ON THE 8TH
INTERNATIONAL CONGRESS ON
THE JURASSIC SYSTEM
SHEHONG OF SUINING, SICHUAN,
CHINA, AUGUST 2010**

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In September 2006, towards the end of the 7th Jurassic Congress in Krakow, Poland, we received a passionate invitation from Jingeng SHA on behalf of his scientific colleagues for the 8th Jurassic Congress to be held in Shehong of Suining, Sichuan, China. The invitation also had the enthusiastic support of representatives, who were present, of government at local, provincial and national levels. They promised that the resources for organisation and financial support would not be lacking. At the time some of us wondered if they could possibly be able to fulfil all their promises!

In August 2010 they delivered! No expense was spared to make us feel welcome and to enable an excellent and successful Congress to be held. Quite clearly the Organising Committee had expended an enormous amount of time and resources on the organisation and a complex set of arrangements. They are to be congratulated for the success of their hard work.

Before the Congress there was slight disquiet as to whether the strong governmental input on the organisation might influence the scientific emphasis of the Congress. It did not. The impression was that our hosts were genuinely delighted and honoured by our presence. Of course, it was used to promote tourism in the area, for example several references to the Jurassic Congress in the Air China inflight magazine! On the other hand, this was also superb positive publicity for the Congress and for research on Jurassic

stratigraphy and palaeontology. With large welcome banners at Chengdu Airport, in Suining, and everywhere we visited, the local populations were introduced to our work and encouraged to visit such facilities as the new Shehong Petrified Forest National Geopark and Geological Museum, with its excellent displays and explanations in Chinese and English.

The promotion of the 8th International Congress on the Jurassic System was of mutual benefit to both Suining City and to the wider Jurassic community. It was extensively reported on several television channels (including Sichuan TV, Suining TV and Shehong TV) and in the press (Xinhua News Agency, SCTV, Sichuan Daily, Suining Daily). Many of us were interviewed, though few of us saw the results!

Congress sessions:

The Congress sessions were all held in the Fuluowan Hotel, in a beautiful setting by a lake in the Fujiang River just north of the town of Shehong in Shehong County, approximately 15 km north of Suining City in the eastern part of Sichuan Province [at last I understand the relationship between Shehong and Suining]. The hotel had excellent facilities, enhanced for our Congress, with three conference halls available, enabling up to three parallel sessions.

The organising Committee had also arranged for a small army of English-speaking volunteer helpers, who were always charming and helpful. They were a great credit to their country.

Two plenary sessions were held:

1. On Monday morning (after the Opening Ceremony):
 - (i) Anthony HALLAM on interpretations of Jurassic environments;
 - (ii) Paul OLSEN on the Colorado Plateau Coring Project;

- (iii) Jingeng SHA reviewing the Jurassic in China.
2. On Tuesday morning:
- (i) Jozsef PALFY on the Triassic/Jurassic transition;
 - (ii) Zonghe ZHOU, Fan JIN and Yuan WANG on Middle to Late Jurassic Yaoliao Biota in NE China;
 - (iii) Stephen HESSELBO on how well we know big events in the Jurassic.

3. Other presentations, oral and poster, were arranged under eight topics in several sessions on Monday afternoon, Tuesday morning, Thursday morning and afternoon and Friday morning (for explanation of “short papers published: see Publications, below):

S1 *Marine and non-marine Jurassic boundaries and stratotypes:*

12 presentations, including 4 posters; 15 short papers published.

S2 *Biostratigraphy, sequence stratigraphy, isotopic stratigraphy, magnetostratigraphy, cyclostratigraphy:*

47 presentations, including 18 posters; 49 short papers published.

S3 *Biodiversity and evolution of Jurassic life:*

40 presentations, including 17 posters; 54 short papers published.

S4 *Depositional facies, palaeogeography, palaeoenvironment and ecosystem reconstruction:*

19 presentations, including 9 posters; 29 short papers published.

S5 *Jurassic palaeoclimate and palaeo-atmospheric CO₂:*

11 presentations, including 2 posters; 15 short papers published.

S6 *Major geological events and their causes and mechanics:*

10 presentations, including 4 posters; 12 short papers published.

S7 *Mineral and energy resources of Jurassic deposits:* 6 short papers published.

S8 *Jurassic Geoparks and museums: their roles in geological heritage protection and public education, etc.:* 3 short papers published.

4. A business meeting of IGCP 506 was held on Thursday evening 12th August and will be reported elsewhere.

5. An open business meeting of the International Subcommittee on Jurassic Stratigraphy was held in the afternoon on Friday afternoon 13th August and will also be reported elsewhere.

Field excursions:

An extremely important part of any Jurassic Congress is the field excursions before (A1-2) and after (C1-3) the Congress. The mid-Congress excursions were integrated into the main Congress programme and will be commented on below. Two of the excursions originally proposed had to be cancelled - the pre-Congress excursion to Xinjiang Province and the post-Congress excursion to southern Tibet. The former was replaced by an alternative.

Excursion A1: Terrestrial Mesozoic of Ordos Basin, Shaanxi Province, led Shenghui DENG and colleagues, with 9 non-Chinese and 6 Chinese participants; based in Yan'an (3 nights) and Xi-an (2 nights); visited

- (i) Triassic sections east of Yan'an, plus China's first onshore (1907) oil well (still producing until late 20th C);
- (ii) Middle-Upper Jurassic and Lower Cretaceous sections west of Yan'an;
- (iii) Triassic to Jurassic sections south of Yan'an;

- (iv) Tourist sites near Xi-an, including the Terracotta Army.

Excursion A2: *Non-marine Jurassic and Cretaceous, Jehol Biota, in Western Liaoning Province*, led by Baoyu JIANG and colleagues, based in Beipiao (3 nights), Yixian (1 night) and Beijing (1 night); visited

- (i) Jurassic in Haifanggou area;
- (ii) Lower Cretaceous in Sihetun area and Fossil Bird Museum;
- (iii) Lower Cretaceous in Yixian area.

Excursion C1: *Marine Lower to Middle Triassic, non-marine Upper Triassic, Jurassic and Lower Cretaceous in Sichuan Basin*, led by Yongdong WANG and colleagues, with 24 non-Chinese and 9 Chinese participants; based in Chongqing (3 nights), Zigong (2 nights) and Chengdu (1 night); visited

- (i) Jurassic to Lower Cretaceous in Santai area;
- (ii) Museums in Chongqing for the Jurassic dinosaur exhibition;
- (iii) Marine Upper Permian to Middle Triassic, non-marine Upper Triassic to Middle Jurassic in Hechuan area;
- (iv) The Lower Jurassic sequences of the Ziliujing Formation in Zigong City; the Dinosaur Museum and Geopark, Zigong.

Excursion C2: *Permo-Triassic and Jurassic in Jiangsu and Zhejiang Provinces*, led by Huawei CAI. This excursion was cancelled because there were not enough participants registered.

Excursion C3: *Marine and non-marine Jurassic of Thailand*, led by Assanee MEESOOK and colleagues, with 4 non-Thai and 6 Thai participants; based successively in Ayutthaya, Sukothai, Mae Sot (2 nights), Ayatthuya, Cha-am, Surat Thani and Krabi; visited

- (i) Non-marine Jurassic in Phitsanulok Province, marine Triassic and Cretaceous in Uttaradit province;
- (ii) Marine Jurassic in Tak Province (2 days);
- (iii) Post-Permian conglomerates and red beds in Prachuap Khiri Khan Province, marine Jurassic in Chumphon and Surat Thani Provinces;
- (iv) Brackish to marine Jurassic in Nakhon Si Thammarat Province; marine Jurassic in Krabi Province;
- (v) Tourist visits included Sukothai Historical Park and Ayutthaya World Heritage Site.

Mid-Congress Excursions

Two mid-Congress excursions were arranged as part of the programme, and both included some touristic and cultural elements. All those registered for the Congress were invited to participate and were given a small booklet for each excursion that included the bus number for each person. There was a convoy of over 10 buses plus other vehicles involved for each excursion.

The convoys were escorted by police vehicles, to make sure that the road ahead was clear and enabling the buses to remain together. At each road junction there was a policeman to stop other traffic; at entrances to motorways a police vehicle stopped all other traffic until we had passed through. I estimate that several hundred police officers were involved on our behalf! The city of Suining must have come to a partial halt on the Tuesday afternoon!

Excursion B1: *Shehong Petrified Forest National Geopark and Museum and Suining City*: led by Xiaoping XIE. On Tuesday afternoon the convoy travelled through villages with children and adults lining the streets to greet us to the Shehong

Petrified Forest National Geopark. The programme was:

- (i) Welcome and visit to the Geopark's new Geological and Palaeontological Museum, a striking building architecturally dominated by two large "tree trunks"; the exhibition is most impressive, with texts in Chinese and English, including descriptions of the history of stratigraphy and palaeontology, of key fossil groups, of the Periods of Earth history and examples of local fossils.
- (ii) Walk through the Geopark where there are exhibited fossil trees *in situ* and extensive gardens.
- (iii) Travel to Suining City to visit a large specially prepared outcrop of the Upper Jurassic Suining Formation.
- (iv) Welcome and guided visit to the Porcelain Museum of the Song Dynasty in central Suining City (a national treasure).
- (v) Reception banquet given by the Suining Municipal Committee of the CPC and the Suining Municipal Government in the Mingxing Hall, Suining.
- (vi) Visit to the Colourful Road illuminated district of Suining City.

Excursion B2: Dujiangyan City, Yingxiu of Wenchuan (2008 Earthquake site): led by Bihong FU. Wednesday 11th was devoted to a whole-day excursion to Wenchuan County in western Sichuan, the area most severely affected by the earthquake of 12th May 2008. The excursion visited:

- (i) Jinling Village, a new model part of Tianma Town with unified planning and self-construction;

- (ii) Beijie Elementary School (where we had lunch), built to replace four schools, in Guangkou Town;
- (iii) Niumiangou Village, Yingxiu Town, near the epicentre of the earthquake, destroyed by the earthquake followed by landslides and a large mud and debris flow. The amount of reconstruction in the area achieved in two years is most impressive.
- (iv) Shuimo Town, where a large group, many in ethnic costume, waited at the town hall to welcome us to see a model of the reconstructed town; followed by a walk through a section of the reconstructed town built in the traditional style of the local ethnic minority, with presentations by a traditional music group and by folk dancers.

Publications

Several publications were prepared for the Congress and distributed to participants on registration or soon thereafter. The availability to others of these publications remains to be organised.

1. A total of 183 short papers and abstracts submitted and approved (though not all were presented to the Congress) is published by China University of Geosciences (Beijing) and Peking University as: *Short Papers for the 8th International Congress on the Jurassic System – Marine and non-marine Jurassic, August 9-13, Shehong of Suining, Sichuan, China.* 2010. *Earth Science Frontiers, Special Issue*, vol. 17, 412pp.
2. A series of publications as *Contributions to the 8th International Congress on the Jurassic System*

- were published by University of Science & Technology of China Press:
- (a) WANG, Yongdong et. al. 2010. *The Terrestrial Triassic and Jurassic Systems in the Sichuan Basin, China*. In English 216pp; in Chinese 178 pp.
 - (b) DENG, Shenghui et al. 2010. *The Jurassic System of northern Xinjiang, China*. In English 279pp; in Chinese 219pp.
 - (c) JIANG, Baoyu et al. 2010. *Outline of the Jurassic and Cretaceous Systems in Western Liaoning, NE China*. In English 84pp; in Chinese 85pp.
 - (d) MEESOOK, Assanee & SHA, Jingeng 2010. *The Jurassic System of Thailand*. In English (only) 124pp.
3. A palaeontological monograph was published by the Geological Publishing House (Beijing), also as a *Contribution to the 8th International Congress on the Jurassic System*:
- (a) YIN, Jiarun 2010. *Jurassic ammonites of Tibet*. This contains the following chapters:
 - (i) Rhaetian (Late Triassic) and Hettangian (Early Jurassic) ammonites from the Germig Formation of Nyalam County, southern Tibet. 1-30, 8 pls.
 - (ii) Early Jurassic (Sinemurian, Pliensbachian and Toarcian) ammonites from the Tibetan Himalayas. 39-57, 5 pls.
 - (iii) Bajocian (Middle Jurassic) ammonites from the Nienixiongla and Lalongla sections of Nyalam County, southern Tibet. 63-82, 6 pls.
 - (iv) Middle Jurassic (Bathonian-Callovian) ammonites from the Lalongla Formation, Nyalam, southern Himalayas. 89-123, 13 pls.
 - (v) Bajocian ammonites from the Sewa Formation of the Baidoi section, and the Jurassic sedimentary environments in Qiantang. 137-155, 12 pls.
 - (vi) Early Bajocian (Middle Jurassic) ammonites from the Sewa Formation at Gangni Village of Amdo County, Tibet. 169-177. 5 pls.
 - (vii) A review of Jurassic ammonites from the section at the 114th Maintenance Station, Amdo, Tibet. 183-199, 3 pls.
 - (viii) First record of an Oxfordian (Upper Jurassic) Euaspidoceratid fauna from the Biru Region at the northern margin of the Lhasa Block, and its geological significance. 203-222, 4 pls.
 - (ix) Age and sedimentation history of the Late Bathonian (Middle Jurassic) ferruginous stromatolite-bearing sandstone beds from the Nyalam area, southern Tibet. 227-235, 1 pl.
 - (x) Distribution pattern of Late Triassic Tibetitids (Ceratiida) and *Indopecten* (Bivalvia) from the Qiantang

Region, and its palaeogeographic significance. 237-243.

- (xi) Postscript. Memory of my mentor – J.H. Callomon. 244-247.

Almost all text is in Chinese with some English summaries.

4. Field Guides for the 8th International Congress on the Jurassic System. Shehong of Suining, Sichuan, China, August 2010. 166 pp.

This book provides the full texts and illustrations for pre-Congress Excursions A1 and A2, for mid-Congress Excursions B1 and B2 and post-Congress Excursions C1 and C2. The section for post-Congress Excursion C3 (Thailand) is introductory and was supplemented by a field programme guide produced locally.

5. Publication of the Congress proceedings is planned, but details of instructions for preparation of manuscripts and deadlines remain to be decided by the Scientific Committee. Contributed papers related to the scientific themes for the Congress are invited from participants and will be subject to refereeing and editorial processing.

Banquets and Cultural events

Most Congresses have one special banquet/reception. This one had several!

- (i) Sunday 8th August, evening - “ice breaker” [unfortunately many did not arrive in time for this].
- (ii) Monday 9th August, early evening - welcome banquet in the Dining Hall of the Fuluowan Hotel.
- (iii) Monday 9th August, evening – cultural performance in

Conference Hall 2 of the Fuluowan Hotel by the Mianyang City Dance and Theatrical Troupe supported by guest artists, a programme of music, dance, song, acrobatics and magic of exceptionally high quality.

- (iv) Tuesday 10th August – banquet in Mingxing Hall, Suining City.

- (v) Friday 13th August – farewell banquet in the Dining Hall of the Fuluowan Hotel, with musical entertainment by classical and traditional musical groups and by top-class singers.

Conclusions

The 8th International Congress on the Jurassic System, held for the first time in Asia, was a great success, thanks to all the hard work and careful preparation by the Congress Organising Committee, chaired by Jingeng SHA, and to the strong logistic support by the local governments of Shehong County, Suining City and the Sichuan Province. To all of them we express our sincere thanks.

Our hosts did a magnificent job in making all the participants welcome. The response from the international community was, it must be stated, slightly disappointing, with too many who had registered and submitted abstracts of communications but did not in the end arrive to participate. Attendance on the field trips was also generally sparse.

The Congress has already proved to be very productive in terms of publications (which provided all participants with a heavy burden to get home!). We look forward to reading the published proceedings.



Shehong Petrified Forest National Geopark and Museum

**REPORT ON THE INTERNATIONAL
COMMISSION ON STRATIGRAPHY
(ICS) WORKSHOP (PRAGUE 2010):
THE GSSP CONCEPT**

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Nearly 60 stratigraphers gathered at Charles University in Prague between May 31st and June 3rd, 2010, to participate in a workshop organized by ICS, in order to discuss the past, present and future of the GSSP concept. Our standard geological time scale is underpinned by Global Stratotype Sections and Points (GSSPs). Their selection is managed by ICS and its constituent bodies. As the Jurassic Subcommittee just passed the halfway mark by the designation of the base Hettangian GSSP, the sixth in our total of eleven stage boundaries to be defined, we are all too well aware of the significance of the concept and the difficulties of the process of its implementation. Thus the initiative to convene a workshop on GSSPs, proposed and organized by ICS Chair Stan Finney, was timely. The majority of subcommittee chairs, with several other members of their executive and membership were in attendance. Prague was a well chosen venue not only for its tourist attractions and famous beer, but also for the „*genius loci*”, as the first GSSP was established in 1972 at the Silurian-Devonian boundary at Klonk near the village of Suchomasty, a mere stone’s throw from the Czech capital.

The workshop was loosely structured around presentations by invited speakers, leaving ample time for discussions. The first day focused on existing and proposed GSSPs, with the goal of distilling best practice and a recipe for the exemplary proposal. Although I didn’t feel that I came away with a firm such recipe, the presentations were indeed insightful and at

the very least, helped to identify pitfalls to avoid. The GSSP is a fine concept and the best we have for standardization, yet in real world the „perfect” GSSP is an elusive goal to pursue. Lessons learned from Palaeozoic colleagues were instructive. Mike Melchin’s Silurian and Thomas Becker’s Devonian presentations provided examples of not only stable and well-respected GSSPs, but also of those now considered in dire need of revision. For example, the base Silurian GSSP at Dob’s Linn was defined in overturned strata of a faulted block, affected by low-grade metamorphism. Several of the GSSPs defined early on were exclusively focused on the biostratigraphy of the primary index fossils, often leaving little room for other stratigraphic methods that since have become increasingly important (e.g. chemo-, magneto-, and cyclostratigraphy). There appeared to be an emerging consensus that subcommittees should have a mechanism to suspend GSSPs that proved unworkable and proceed with their replacement. It was instructive to hear that the Devonian Subcommittee, long finished with their task of designation of stage GSSPs, is set to continue to work on formal definitions of substage boundaries. Discussion followed on the necessity and merits of this approach. A similar discussion will need to take place in our community. Closer in time to the Jurassic, Isabella Premoli Silva outlined the progress and problems associated with Cretaceous GSSPs. Many of us certainly appreciate the problem of defining the Jurassic-Cretaceous boundary.

A second day of invited talks touched upon general issues of stratigraphy, such as the use of dual vs single nomenclature (i.e. geochronology vs chronostratigraphy, time units vs time-rock units, and the specific, partly linguistic problem of using Age vs Stage). Discussion time was also devoted to another issue of nomenclature that flared up recently, whether Ma should be used to denote both the age of an event in time and

the duration of events, or Ma should be reserved for the first (i.e. a point in time back from the present) and my or myr be used for the latter. If you are interested, you can read a full story (17 page long!) with arguments pro and con in Newsletter No. 15 of ICS's Subcommittee on Stratigraphic Nomenclature here: http://users.unimi.it/issc/images/attach/ISSC_nl15.pdf. At the end of the day, we felt not in the mood for changing radically well-established and widely taught common usage in both issues.

General sessions were supplemented by ICS business meetings, where these same issues were also discussed. Paul Bown, past-secretary of ISJS, provided able service as now Secretary of ICS. Stan Finney summarized his views that from a practical point of view, progress in GSSP designation is all too often impeded by the following factors: (i) poor leadership (or lack of leadership); (ii) obstructionism and/or personal rivalries; (iii) geologically quiet intervals less amenable to identify boundary markers; (iv) shortage of funding to advance research on key sections. The approach of the current ICS leadership is more cautious than that of their predecessors. Stan Finney emphasized that there is no deadline for finishing all GSSPs, our job is to make sure of steady progress towards the scientifically sound selection of the remaining GSSPs. Another departure from previous policies from the ICS leadership that I note is the attitude towards ASSPs. It appears that auxiliary stratotypes are not regarded a priority and are not likely to receive approval from ICS.

A field trip was an integral part of the meeting, leading us to long established Lower Paleozoic GSSP localities. We visited the Lochkovian/Pragian and the Ludlow/Pridoli GSSPs, before culminating our experience at Klonk near Suchomasty, where a monument marks the historically first defined GSSP of the

Silurian/Devonian boundary. Our spirits remained high despite unseasonably chilly and wet conditions, when pouring rain forced us to satisfy ourselves with a distant look at the hillside from the obelisk.

Social events included a grand icebreaker reception in a hall of the National Museum for a start, and a closing dinner at a Paleolithic theme restaurant. Coffee breaks in the Paleontological Museum of Charles University and lunch breaks in local restaurants near the university campus were well suited to continue the lively discussions.

The meeting was organized through the hard work of Stan Finney, with much help from Czech colleagues Petr Storch and Petr Kraft, whom need to be thanked and congratulated for their effort. After a couple of days of „workshopping” in an unusually relaxed atmosphere, all of us subcommittee officers and stratigraphers in general came away with much inspiration, insightful lessons learnt from each other, and a sense of mission to accomplish our main job, to complete the designation of all missing GSSPs in a foreseeable future.



Workshop participants at the monument marking the Silurian/Devonian boundary near Suchomasty, Czech Republic, the first established GSSP in 1972. The outcrop is on the hillside of Klonk in the background.

**SESSION ON THE JURASSIC
SYSTEM AT THE 2008 AND 2009
ANNUAL MEETINGS OF THE
GEOLOGICAL SOCIETY OF JAPAN**

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A topical session, "The Jurassic System", was organized during the 115th annual meeting of the Geological Society of Japan (Sept. 20-22, 2008) in Akita University. The following 12 talks and one poster were presented in the session and summaries are included in the abstract volume.

Oral Presentations:

YAO, A. 2008. Jurassic tectonics of the Japanese Islands. (invited speaker)

KONDO, Y. & SANO, S. 2008. Post-Paleozoic bivalve diversification as viewed from origination of extant families.

NAKADA, K. & MATSUOKA, A. 2008. Stratigraphical modification of *Dactyloceras helianthoides* from the Nishinakayama Formation in the Lower Jurassic Toyora Group.

MATSUOKA, A., HANDA, N., ANSO, J., NAKADA, K., TERABE, K. & SATO, T. 2008. Stratigraphic levels of *Pseudoneuquenieras*-bearing beds in the Kaizara Formation of the Kuzuryu Subgroup and biometrical analysis of *Pseudoneuquenieras*

ISHIDA, K., TSUJINO, Y., KOZAI, T., SATO, T. & HIRSCH Francis. 2008. Late

Jurassic radiolarian biostratigraphy and ammonite ages in Todorō Section of the Kurisaka Formation, Shikoku.

ISHIDA, N. 2008. Characteristics of the Late Jurassic radiolarian assemblages.

HIRASAWA, S. & KASHIWAGI, K. 2008. Late Jurassic radiolarians from the Arimine Shale Member of the Tetori Group, southeastern Tpyama Pref., Japan and its significance (Preliminary report).

KAKIZAKI, Y., ISHIKAWA, T., TANIMIZU, M., NAGAISHI, K., KAWAGOE, N., KATAGISHI, M. & KANO, K. 2008. The depositional range of Torinosu-type limestones based on Sr stable isotopic ratio.

YAMAKITA, S., EHIRO, M., TAKAHASHI, S. & SUZUKI, N. 2008. Carboniferous to Jurassic continuous sequences of the Otori Formation in the North Kitakami Belt, Northeast Japan.

ITO, T. & MATSUOKA, A. 2008. The age of uppermost chert of the Permian Yoshii Group in the Yoshii Area, Okayama Prefecture, Southwest Japan.

NIKAIDO, T. & MATSUOKA, A. 2008. Triassic radiolarian biostratigraphy of the Sakahogi section in the Mino Terrane, central Japan.

HORI, S. R., NANBAYASHI, K. & IKEHARA, M. 2008. A new Early Jurassic OAE recorded in deep-sea sedimentary rocks of SW Japan.

Poster presentations:

ONOUE, T. & YASUDA, C. 2008. Cosmic spherules from Middle Triassic bedded chert of the Chichibu terrane, southwest Japan.

A topical session, "The Jurassic System", was organized during the 116th annual meeting of the Geological Society of Japan (Sept. 4-6, 2009) in Okayama University of Science. The following 10 talks and one poster were presented in the session and summaries are included in the abstract volume. A similar topical session is being planned for the next annual meeting of the society (Sept. 18-20, 2010) in Toyama University.

Oral Presentations:

MATSUOKA, A. 2009. Outreach activities performed by university: "Cephalopod Exhibition" in Niigata University, 2008.

NAKADA, K. & MATSUOKA, A. 2009. Taxonomical reexamination of the genus *Cleviceras* from the Nishinakayama Formation in the Lower Jurassic Toyora Group.

ISHIDA, N. 2009. Reexamination of the Middle Jurassic radiolarians from the Torinosu-type limestone.

ITO, T. & MATSUOKA, A. 2009. Structural repetition of chert-clastics sequence in the Akiyoshi Terrane, Permian accretionary complex and its significance.

SAKUMA, H., TADA, R., IKEDA, M., KASHIYAMA, Y., OHKOUCHI, N., OGAWA, O.N., WATANABE, S.,

TAJIKI, E. & YAMAMOTO, S. 2009. Paleoredox changes in deep-sea environment based on the Permian/Triassic boundary lithostratigraphy on the Jurassic accretionary complex in Japan.

MIKAMI, T., ISHIDA, K., SUZUKI, S. & HIRSCH Francis. 2009. Late Triassic (Carnian-Norian) conodont fauna and paleobiogeography inferred from the Tamba Jifukudani and Chichibu Hisaidani sections, SW Japan.

HORI, S. R., AKIKUNI, K., NANBAYASHI, K., KUDO, K., MURAKAMI, Y. & IKEHARA, M. 2009. Chemostratigraphy of organic carbon isotope ratio in Upper Triassic-Lower Jurassic bedded chert sequences.

AITA, Y., HORI, S. R., TAKAHASHI, S., K. Bernhard Spörli. & Yamakita, S. 2009. Middle to Late Triassic radiolarian and conodont fossil occurrences from Rakino Island, North Island, New Zealand.

TAKEMURA, A., KISHIMOTO, S., TAKEMURA, S., HORI, S. R. & YAMAKITA, S. 2009. Early Jurassic radiolarians from a carbonate nodule in the Northern Chichibu Belt, Shikoku, Southwest Japan.

ISIGAKI, S. 2009. Jurassic Dinosaur footprints imprinted in the Western end of the Tethys Ocean. Its occurrence and paleogeographical importance. (invited speaker)

Poster presentations:

YOSHINO, K. & MATSUOKA, A. 2009.

Ammonite, radiolarian and planktonic foraminifera fossils from Seidan formation of the Upper Cretaceous Izumi Group in the southwestern part of Awaji Island, Hyogo Prefecture, southwest Japan.

VOLUMINA JURASSICA

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Volumina Jurassica, a journal supported by ISJS, is a peer-reviewed geological journal devoted to the publication of original research papers on all aspects of the Jurassic System. Over the past eight years the format of the journal has been gradually modified. Rapidly growing interest from foreign authors and readers made the editors aware that there is a significant need for an international journal specialising in the Jurassic. We are determined to expand the current position of Volumina Jurassica. At the moment, we plan to issue one volume per year on a regular basis (the 2010 volume is completed), but we are ready to increase the number of issues per year if there is such a need. We are confident that Volumina Jurassica will be soon listed on the ISI list of journals. We are in the process of inviting 17–20 prominent international Jurassic geologists to the editorial council.

Volumina Jurassica is issued jointly by the Polish Geological Institute – National Research Institute (PGI), and Warsaw University. The editorial board is now based in the PGI, which secures a stable organizational framework and financial support (annually, about 30.000 EUR is allocated by PGI to maintain the editorial office of Volumina Jurassica).

The current editorial board comprises Andrzej Wierzbowski (editor), Grzegorz Pieńkowski (deputy editor) and Anna Andraszek (secretary); we cooperate with Dr John Wright in terms of linguistic adjustment. Volumina Jurassica is a free-access journal (pdf's are fully accessible on the web page), 500 paper copies are

printed, and are shipped without charge to authors, reviewers and selected libraries.

The previous issues are accessible on the old website:

<http://www.voluminajurassica.org>

This website will be soon re-organized and updated.

You are invited to submit your papers to our journal.

Important !!! Please, send the papers to the new address:

volumina.jurassica@pgi.gov.pl

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JURASSIC.RU TEAM INVITES YOU TO VISIT THE WEBSITE

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JURASSIC.RU (<http://jurassic.ru/>) is a dynamically developing bilingual (English+Russian) non-commercial website in Mesozoic geology and paleontology developed by a group of researchers led by Mikhail A. Rogov. Our aim is to make easy and extremely effective two basics of science – information retrieval and scientific communication.

The most important current activities of the JURASSIC.RU Team are:

- creating and supporting [large electronic libraries](#) (with publications in .PDF and .DJVU formats) in Mesozoic paleontology and stratigraphy, both digitized by JURASSIC.RU Team and sent by our visitors all over the world. Today about 3000 publications (~30 Gb) can be downloaded from the site.
- section [«Links»](#) containing regularly updating collection of hyperlinks to open access periodicals, libraries and databases specialized in Earth sciences. Today it counts more than 1000 links.
- section [«People»](#) containing links to personal web-pages of Jurassic researchers all over the world. For the researchers who still do not have personal web-pages, we present the possibility to construct such pages, thus developing their authority: all that you need is to download and fill in a simple form and send it to JURASSIC.RU Team.
- we also tend to inform the community about forthcoming and

past events ([Conferences, Symposiums, Meetings](#)), and where possible, present their Materials in electronic format

- today we do not restrict the site to only Jurassic materials, but also develop several independent web-projects in geology and paleontology ([«Geology of the Crimea»](#) (Russian version only), [«Cretaceous literature»](#), [«Joliaf»](#), [«Atlases & Maps»](#) (coming soon) etc. - see the section [«Projects»](#)). And, more important, the JURASSIC.RU Team provides comprehensive assistance in creating case projects in Earth Sciences for general interest.
- a wonderful and strong instrument for discussions, communication and informing colleagues is the [Jurassic Forum](#), where we discuss finds and wide range of questions in geology and paleontology. Moreover, one of the sections of the Forum, [«Jurassic references and paper reviews»](#) gives a unique possibility for everybody to place information and reviews about any published papers and discuss it, sometimes even with the authors. Another special section of the Forum, [«GSSP and Working groups discussions»](#) is a ground for special discussions in stage boundaries and GSSP problems.

We will be happy to see you among the visitors of the JURASSIC.RU and also will particularly welcome any participation in JURASSIC.RU activities - filling the content of the site and [Forum](#) (publications, references, and presenting other kinds of useful information).

Welcome, dear friends!

**REPORT ON THE 3RD CONFERENCE
"JURASSIC SYSTEM OF RUSSIA:
PROBLEMS OF STRATIGRAPHY
AND PALEOEOGRAPHY", RUSSIA,
SARATOV, 23-27TH SEPTEMBER 2009**

*Victor ZAKHAROV, Mikhail ROGOV,
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Following the decision of the 2nd meeting "Jurassic System of Russia" held in Yaroslavl [September 2007], the 3rd meeting was allocated to Saratov. Financial support, obtained from the Russian Foundation for Basic Researches [RFBR grant no 09-05-06052] and several sponsors [JSC «LukBelOil», JSC «Nizhnevolzhskneftegaz», JSC «NK Geopromneft», JSC «NK Saratovneftegeofizika», Saratovnedra and NVNIIGG], has brought the possibility to organize the Conference in a wonderful hotel «Volzhskie Dali», located at the Volga river bank, 10 km northwards from Saratov.

The meeting was organised by Andrey GUZHIKOV and his colleagues from the Geological Faculty, Saratov State University, with support of the Jurassic commission of ISC of Russia [led by Victor ZAKHAROV] and JURASSIC.RU website team. The meeting has been attended by 67 participants from 22 organizations in Russia, Ukraine, Belarus and Kazakhstan. All the presentations were devoted to different aspects of Jurassic stratigraphy, palaeogeography, palaeobiology, sedimentology, paleomagnetism and oil & gas resources. Three days of scientific communications (23-25th September) were followed by field trip on 26th September, and visiting Earth Science and Art museums in Saratov on 27th September.

Conference

Oral presentations were divided into 7 sessions. In total, the participants of the conference gave 42 oral and 18 poster presentations. Poster presentations were available for study and discussion during the whole Conference. The most important and interesting data was obtained by complex study of key sections on the Russian Platform, including those proposed as GSSP candidates (contributions by GUZHIKOV, PIMENOV et al., WIERZBOWSKI and ROGOV, among the others). As a result, today key sections of the Middle and Upper Jurassic of the Russian Plate are provided with detailed palaeomagnetic scales in addition to continuous and well-constrained ammonite faunal horizon succession for the Bathonian-Callovian, Callovian-Oxfordian and Kimmeridgian-Volgian boundaries. Many presentations were devoted to geological structure, facies and paleogeography of Arctic regions, economically significant for Russia, such as West6 and East Siberia (ZAKHAROV, SHURYGIN, VAKULENKO, KISLUCVHIN, REPIN)

Abstracts Volume

The Abstracts Volume counts 284 pages and includes 92 short articles, written in Russian, accompanied by English titles. The pdf version now is available online via JURASSIC.RU (see reference below).

Field trips

Two sections were arranged for field trips on 26th September; fortunately both located close to the hotel (less than 10 km) and to each other (ca.1.5 km), so the participants were able to spend enough time studying, sampling and communicating. A field guide with brief description of both sections with some ammonites figured was published and distributed among the participants.

Field trip 1. Bathonian-Callovian boundary beds of Bartolomeevka. The excursion, led by Vladimir SELTZER, demonstrated well-exposed Lower Callovian section, rich in macrofossils (especially ammonites) and also suitable for microfossil sampling. The section provides a continuous succession of Boreal Lower Callovian zones except for uppermost zone of the stage. Upper Bathonian rocks, exposed some distance from Lower Callovian, are non-fossiliferous.

Field trip 2. Callovian-Oxfordian transition in Dubki, Oxfordian GSSP candidate section. This trip was led by Vladimir SELTZER, the person who has discovered the locality in late 90s, and Mikhail ROGOV. They presented a review of ammonite biostratigraphy through the Cl/Ox boundary in this section and briefly discussed its correspondence with other GSSP candidates: Redcliff Point and Saurvonon sections. Ammonite assemblages of all the sections are very close and differ mainly in the ratio of cardioceratid/non-cardioceratid ammonites. Dubki has recently been the subject of palaeomagnetic study and also contains good belemnite and ostracod successions. Some nannofossil and foraminiferal data are also available. Current ammonite stratigraphy for the Dubki section was only preliminary (in KISELEV and ROGOV 2005), with detailed publication is in preparation.

References:

KISELEV D.N. and ROGOV M.A. (2005) Zones, Subzones and biohorizons of the Upper Callovian and Lower Oxfordian of the European part of Russia // in: Zakharov V.A., Rogov M.A., Dzyuba O.S. (Eds)

Materials of the first All-Russian Meeting "Jurassic System of Russia: problems of stratigraphy and paleogeography". Moscow: GIN RAS. P.128-134. [in Russian]

ZAKHAROV V.A. (resp.ed.) (2009) Jurassic System of Russia: problems of stratigraphy and paleogeography. 3rd all-Russian meeting: scientific materials. Saratov: Nauka. 284 pp. [in Russian]

Official web-page of the Conference (in English):

http://jurassic.ru/_eeventsbd.htm#23.09.2009-27.09.2009._3rd_All-Russian_Meeting_%E2%80%9CJurassic_System_of_Russia:_problems_of_stratigraphy_and_paleogeography%E2%80%9D

pdf of the Abstracts Volume:
http://rogov.zwz.ru/JSR09_thesis%20v3%20light.pdf

pdf of the Field Trip Guide:
http://rogov.zwz.ru/Jurassic%20conf-2009_putevoditel.pdf



Participants of the conference near to the Conference hall



Field trip to Dubki Section, 3rd Conference "Jurassic System of Russia: Problems of Stratigraphy and Paleogeography"

**MINUTES OF THE OPEN BUSINESS
MEETING OF THE ISJS
(INTERNATIONAL
SUBCOMMISSION ON JURASSIC
STRATIGRAPHY)**

Stephen HESSELBO, Oxford

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Friday, 13th August, 15:00, Hall 1,
Fuluowan Hotel, Shehong of Suining,
Sichuan, China.

1) Introduction (how ISJS serves the
Jurassic community)

The ISJS Chair, Prof. József Pálffy, explained the organizational structure of the Subcommittee and its relationship to the International Commission on Stratigraphy (ICS) and the International Union of Geological Sciences (IUGS). As well as being the umbrella organization under which Jurassic congresses were organized, the aims and objectives of the Subcommittee include the definition of stage boundaries. The ISJS has 'task groups' or 'working groups' for each stage and stage boundary, as well as thematic working groups, but not all of these groups are currently active. Five GSSPs remain to be defined for the Jurassic, discussed further under agenda item 7. Another major function of ISJS is to facilitate communication within the Jurassic research community, for example through production of the newsletters, liaison with the compilers of *Volumina Jurassica*, and support for a web site.

The process for selection of the next congress was also outlined. Under agenda item 6, and after presentations made by India and Mexico, the opinion of the delegates to the present congress would be sought. This opinion poll would be conducted through a paper ballot, the result of which would help inform the 23 voting

members of the Subcommittee in coming to a decision.

2) Status of the ISJS Newsletter

Over recent years the Newsletter has been produced in one or two issues per year. The next issue is scheduled to be circulated in September and will include news of the next congress venue, a report of the congress, and minutes of the present business meeting. The Newsletter is distributed by e-mail and available as a PDF from the ISJS web site. The editor of the Newsletter, Prof. Stephen Hesselbo, is happy to hear from anyone who wishes to contribute. In response to a suggestion, Dr Mikhael Rogov kindly agreed to scan copies of old newsletters so that these could be made available on the ISJS web site as PDF files.

3) *Volumina Jurassica*

Dr Gregory Pienkowski outlined the arrangements for publication of *Volumina Jurassica*. Prof. Andrzej Wierzbowski is the editor-in-chief and Anna Maziarz is secretary. Publication is now supported by the Polish Geological Institute (a National Research Institute) and thus also the Polish geological survey and hydrogeological survey). At present the journal produces one volume per year, but there is the potential for this to increase. The journal is web-hosted and open access, free of charge. All papers are peer reviewed. The 2010 volume is ready and will be published shortly. *Volumina Jurassica* could publish the post-congress volume if the present congress organisers so wished. A possible change of title to 'Jurassica' is being discussed. ISI listing is being applied for.

The ISJS Chair suggested that in the future the Newsletter could be split into: a) rapid communications circulated to interested parties immediately upon receipt by the

ISJS Secretary, and; b) items that are research related, which could be published in *Volumina Jurassica*.

4) The ISJS website

The Secretary gave an introduction to the ISJS website and encouraged Jurassic researchers to make use of and contribute to it. One suggestion from the floor was that the web site could contain more in the way of historical narrative about ISJS business.

A question was raised about Corresponding Membership, and how membership was conferred. The ISJS Secretary outlined his understanding that Corresponding Membership dated back to a time when communication was done by post rather than e-mail. A Corresponding Member served as a conduit for two-way communication, usually at a national level. With the advent of electronic communication the time was right to reconsider this category of membership and its effectiveness. Past-Chair Nicol Morton commented that Corresponding Members still serve a useful purpose in acting as a liaison to national organizations or research groups in subdisciplines, making sure that the Voting Membership is made aware of issues of interest in those circles.

5) Planned Proceedings of the 8th International Congress on the Jurassic System

The Chair of the Organizing Committee for the 8th Congress, Prof Jingeng Sha, outlined his thoughts for production of a conference proceedings volume. Plans were not yet firm, but the proceedings could be published in either *Volumina Jurassica* or *Geoscience Frontiers*. An advantage of *Geoscience Frontiers* was that the publication would be in both English and Chinese. A straw poll

indicated that there may be in the region of 20 contributions submitted. Prof Sha stated that the organizers had the resources to produce a volume rapidly. A decision would be made by the conference Organizing Committee in time for announcement in the newsletter planned for September.

6) Presentations of candidate host countries of the 9th Jurassic Congress (India and Mexico)

The ISJS Chair reiterated the procedure for selection of the venue for the next Jurassic Congress, to be held in 2014. A presentation was given by Prof. D.K. Pandey in support of a proposal from Pandey and Fürsich for the next congress to be held in Jaipur, India. A second presentation was given by Dr Anna Berta Villaseñor in support of a proposal to hold the next congress in San Luis Potosi, Mexico. Supporting documentation was provided for both presentations. The likely timing for a meeting held at either location would be the first two weeks of January, in order to facilitate field excursions.

The result of the paper ballot was as follows: India, 50; Mexico, 51; abstentions, 1; spoilt/ambiguous, 2.

7) Outstanding GSSPs in the Jurassic

The ISJS Chair outlined progress with definition of the remaining GSSPs for Jurassic Stages.

A document supporting the only candidate GSSP for the base of the Toarcian at Peniche, Portugal, has been prepared under the guidance of Prof. Rogerio Rocha. Further progress was imminent.

After the death of Prof. John Callomon, a new chairman for the Callovian Task Group would be needed. Dr Eckhardt Mönnig had agreed to liaise with the

Subcommission in order to find a new chairman.

Progress had been made in defining two candidate GSSP sections for the base of the Oxfordian and the work that now had to be undertaken to agree a selection procedure. Guillermo Meléndez, chair of the Oxfordian Task Group, was not present at the meeting but will be contacted by the Subcommission Bureau to work towards formal proposals and ballots.

Definition of the base of the Kimmeridgian had received much discussion during the congress. Prof. Andrzej Wierzbowski, the Task Group Chair, had indicated that new evidence was becoming available that would shed light on correlations into high northern paleolatitudes and also to South America. This ongoing work should resolve ongoing disagreements which principally concerned correlations and recognisable horizons in Europe.

Little progress had been made recently regarding the base of the Tithonian. Prof. Frederico Oloriz summarized the present situation. Potential sections in France need to be actively considered, and completion of ammonoid biostratigraphic and other integrated stratigraphic projects encouraged. The Task Group will attempt to organize a field workshop in southeastern France in 2011 to examine candidate sections and facilitate progress.

8) Other business

A minutes silence was proposed in memory of Prof. John Callomon, Abbé Rene Mouterde, and Prof. Serge Elmi. This was duly observed.